

Housing La Habana Vieja

Reframing the Formal
& Informal Vernacular

Jessica Isabella Baralt

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Reframing the Formal & Informal Vernacular

Jessica Isabella Baralt

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Masters of Architecture
In
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Paul Emmons, Chair
Marcia Feuerstein
David Lever

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Havana, heritage, housing,
vernacular, informal

Abstract | Housing la Habana Vieja

Jessica Isabella Baralt

The design of housing in an urban fabric designated as a UNESCO World Heritage Site requires consideration of the historic character and how each building contributes to the streetscape. Beyond the façade, one discovers the unique story of each parcel through the transformations that its residents have enacted over many centuries in order to accommodate greater density and the evolution of family structures. One might even find a record of building periods following a hurricane, for example, inscribed by hand on a column in the shared *patio* for the collective memory of current and future tenants. These transformations are almost all realized through self-effort construction and are a community-building exercise. Unfortunately, the paradox that accompanies the informal typologies to construct additional housing is destructive more often than not. The additions to and division of the highly articulated residential architecture in Havana have a pervasive impact on the building structure and exacerbates the decay of the built environment. The formal typologies established to define thresholds and transition between public and private spaces are as much a part of the social landscape as the informal insertions. Housing la Habana Vieja calls for a reconciliation of the architectural heritage with contemporary building attitudes in its design for multi-family housing in the historic city center of Cuba.

This project addresses the housing crisis in Havana and proposes a resolution that is suited to the “economy of means, both material and aesthetic,” to appropriate the design philosophy of Cuban-American architect Belmont Freeman. The context investigates the underpinnings of housing attitudes by identifying milestones and gaining perspective from dialogue with the residents of la Habana Vieja. Documenting the formal and informal typologies allowed for a comparison of both their spatial implications and their performance, or function. The design proposal explores the intersection of these typologies to manifest the social behaviors and cultural values in the definition of shared and private space. The formal typologies engage the transitional qualities of space by layering building elements as thresholds to private realms. The informal typologies are engaged in the construction of habitable space by activating the immediate built environment through the addition and multiplication of planes. To design at the corner of the past and present is to preserve the vernacular and brandish the opportunities that the future holds for Housing la Habana Vieja.

General Audience Abstract | Housing la Habana Vieja Jessica Isabella Baralt

Design multifamily
housing to reconcile
formal and informal
housing typologies
of La Habana Vieja

By transcending its
architectural heritage
and resolving the spatial
implications of Cuban
contemporary living



Acknowledgements

To my family:

Thank you for planting the roots, even when yours were transplanted, and for inspiring me to deepen my own roots through this project.

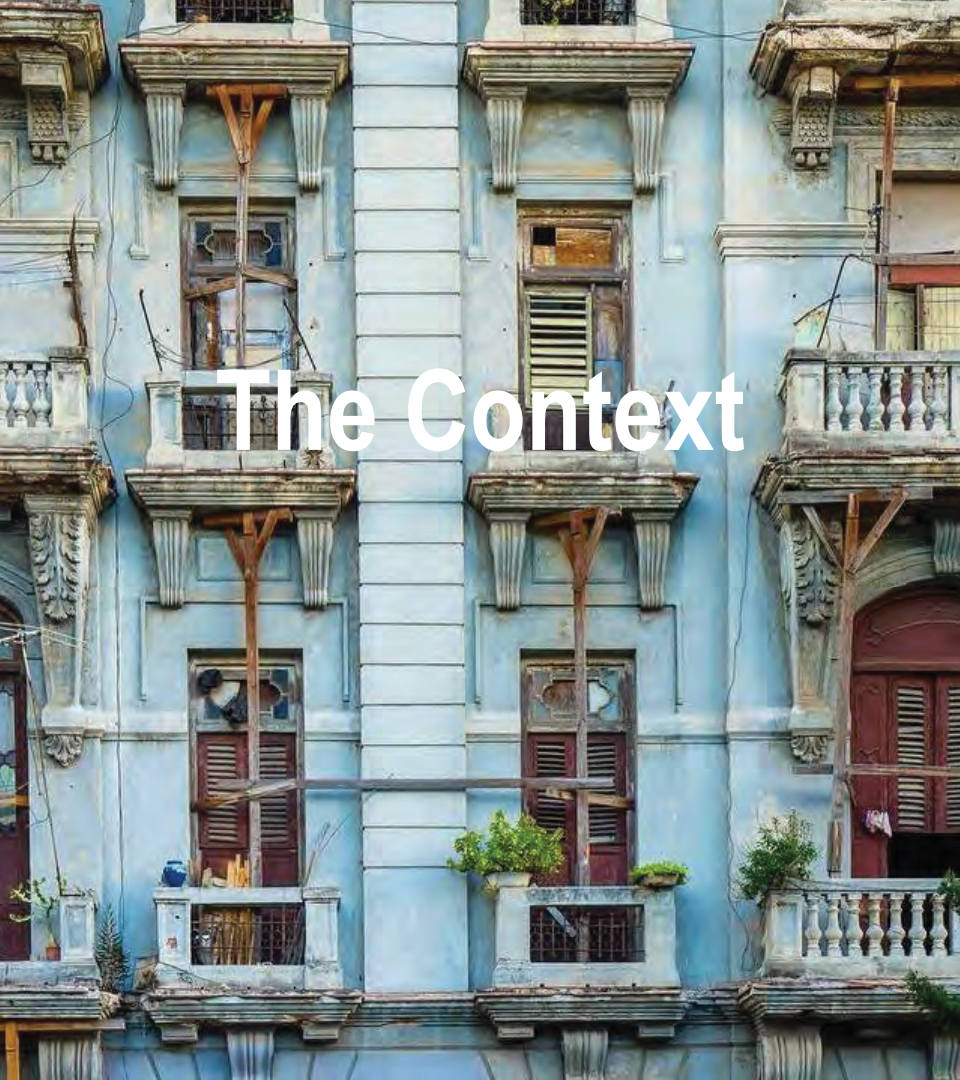
To my mentors:

I consider myself lucky for having the opportunity to grow in the light of your wisdom.

Table of Contents

Abstract	ii-iii
Acknowledgements	iv
Table of Contents	v
The Context	1
Considerations	24
The Proposal	43
References	77

Bibliography | Endnotes | Image Credits



The Context

Milestones

Typology

Conditions

Inventar

Demographics

Profiles

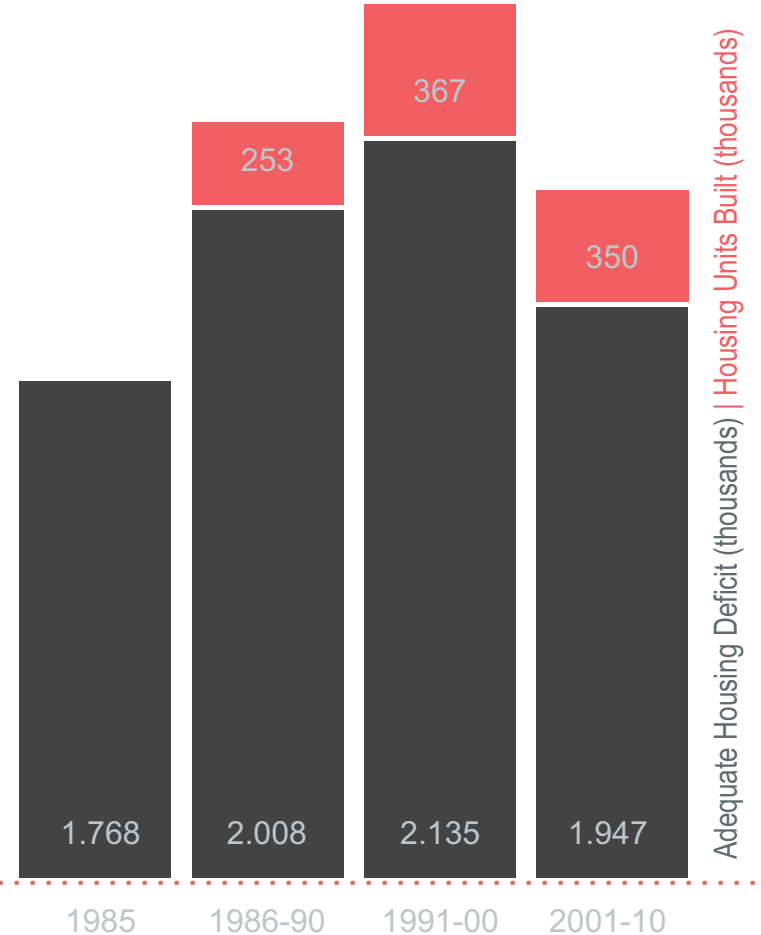
The Context: Housing Crisis

The 2010 census estimated a shortage of 500,000 housing units to meet the needs of the population.

To remediate the housing crisis, one million housing units would need to be built in the next decade, with 200,000 of those located in the province of La Habana.

The magnitude of the housing deficit increases annually, and at present is between 600,000 and one million housing units.

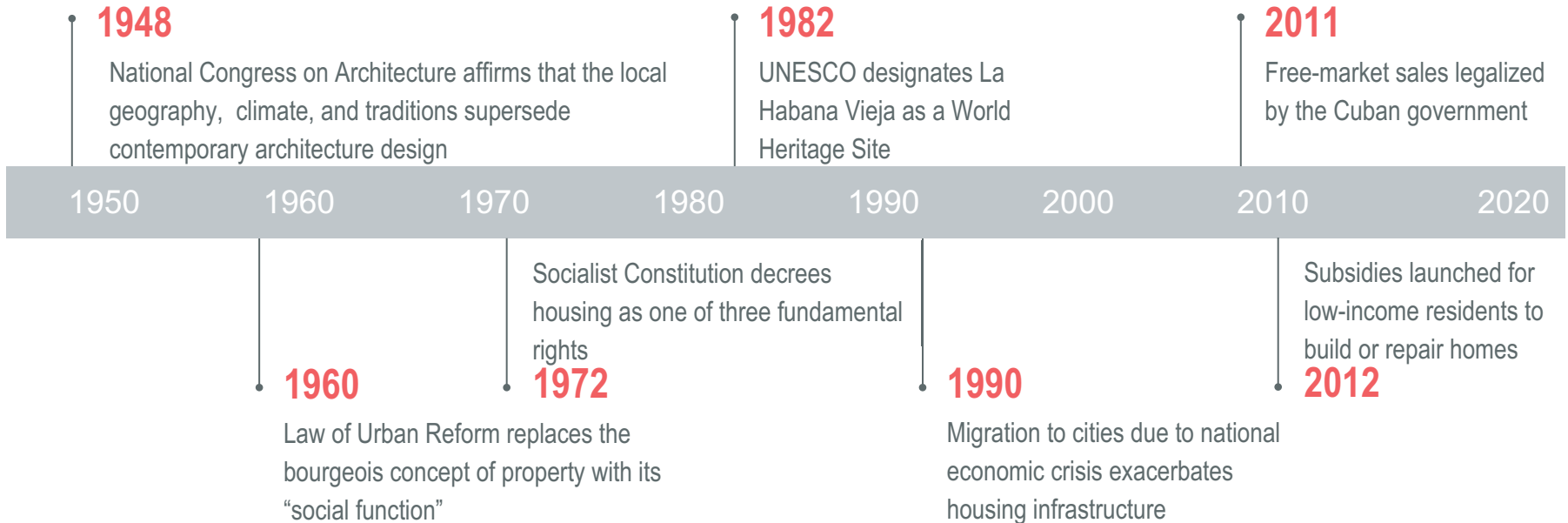
UNESCO registered an average of two partial or full building collapses in a three day period.



Milestones

Framing the Proposal in Time

Key events and legislation in Cuba's history define the housing crisis



Housing Typologies

Private | Public

Formal

Portal | Portico

Persianas | Louvers

Zaguan | Vestibule

Galleria | Exterior Corridor

Patio | Courtyard

Pasillo | Corridor

Balcon | Balcony

The three 'P's (*portales*, *persianas*, and *patios*) of residential architecture in Cuba articulate thresholds and define transitional spaces between public and private realms.

Informal

Barbacoa | Loft

Entresuelo | Mezzanine

Desglosar | Mezzanine with Separate Entry

Ampliar | Addition or Expansion

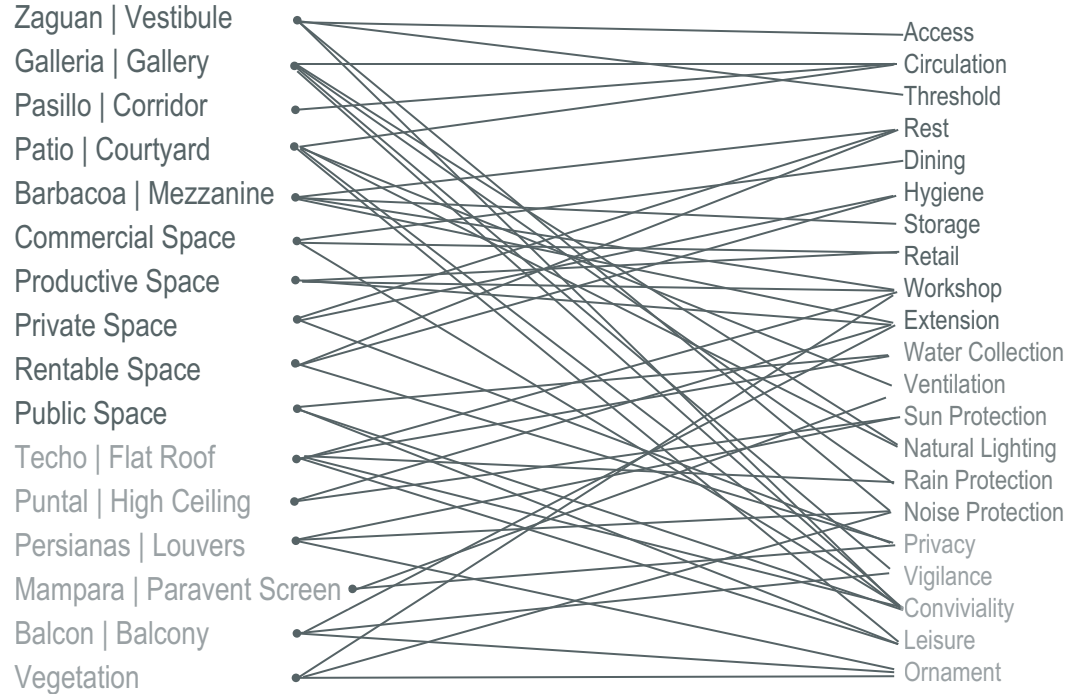
Azotea | Rooftop Addition

Casa de Vecindad | Subdivided Housing

The transformations above collectively present a paradox wherein the self-effort solution to the housing crisis exacerbates the decay of the city fabric and the destruction of its architecture.

Architectural Elements + Implications

Building Elements | Spatial Elements

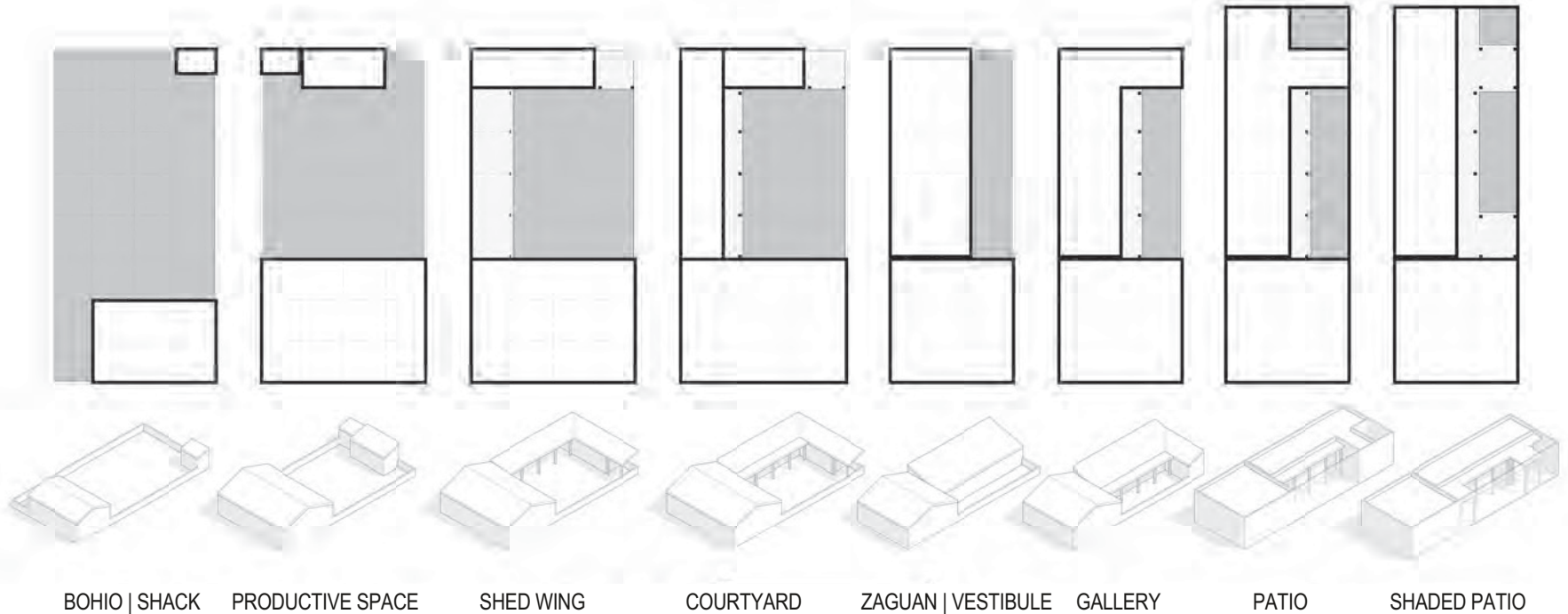


Cultural | Environmental | Spatial Implications

Progression of Residential Architecture in Havana

16TH CENTURY

17TH CENTURY

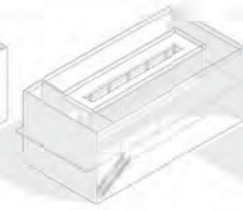
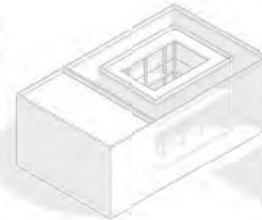
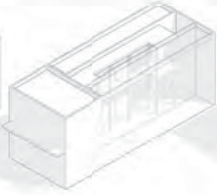
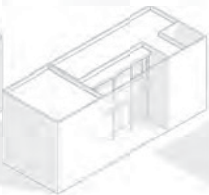
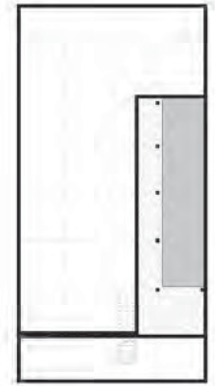
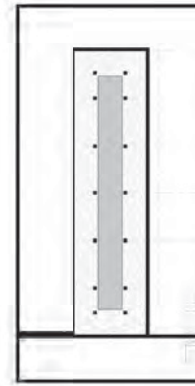
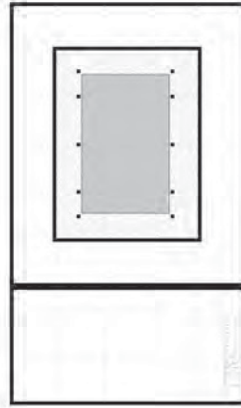


Emergence of Architectural Elements

18TH CENTURY

19TH CENTURY

20TH CENTURY



COVERED BALCONY

PASILLO | CORRIDOR

PUBLIC SPACE

SHARED COURTYARD

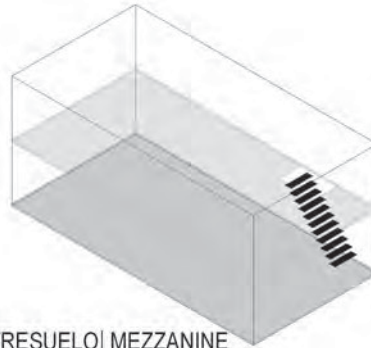
APARTMENTS

RENTABLE SPACE

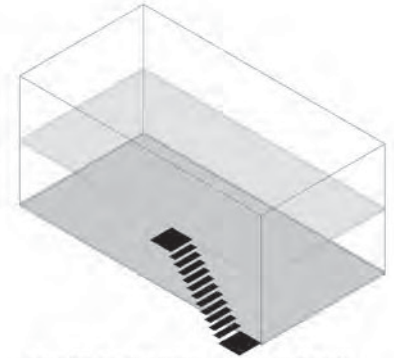
Informal Housing Typologies



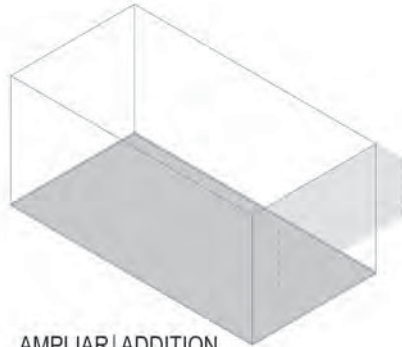
BARBACOA | LOFT



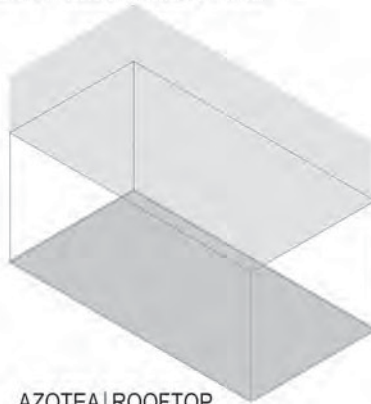
ENTRESUELO | MEZZANINE



DESGLASAR | SEPARATE ENTRY



AMPLIAR | ADDITION

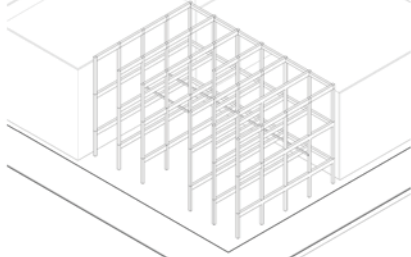


AZOTEA | ROOFTOP

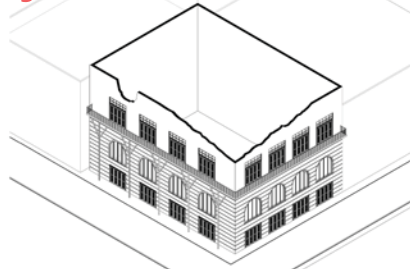


CASA DE VECINDAD

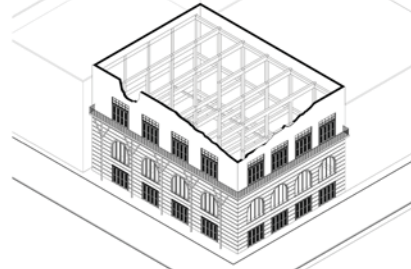
Architectural Decay and Restoration in Havana



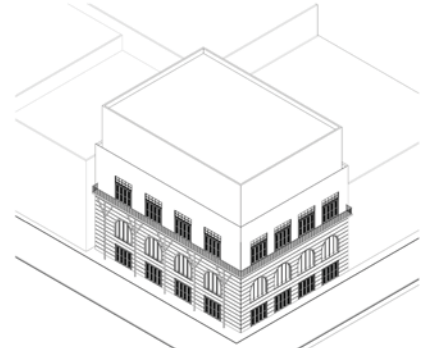
STRUCTURE



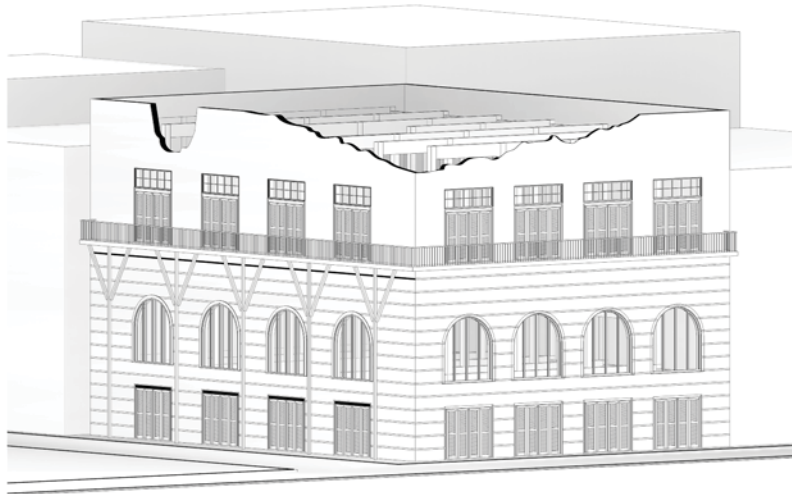
BEARING WALLS



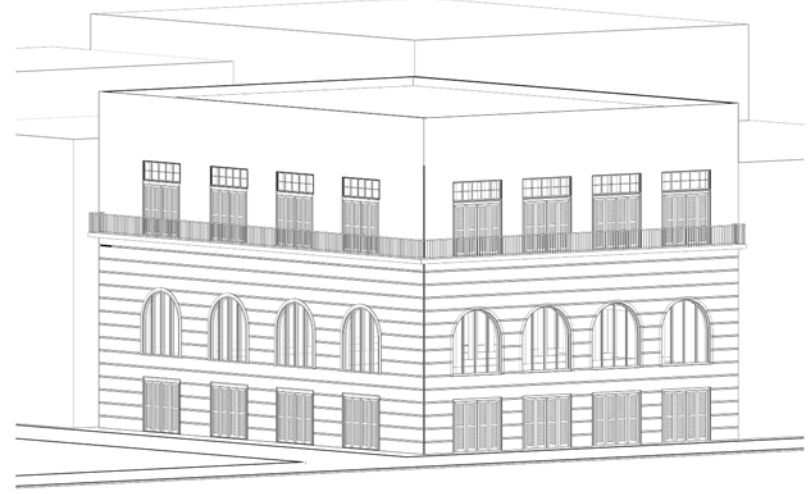
STRUCTURE + WALLS



WALLS + INFILL



COLLAPSE



RESTORATION

Building Conditions | Exterior



Building Conditions | Interior





Inventar | **Improvise**

“When you need to increase the size of your house, and there is no patio to build upon, no garden to take up, not even a balcony, when you need to expand and you live with your family in an apartment, the only thing left to do is to raise your eyes to the sky and discover that, amidst the height of the ceiling, one could well fit in another floor, a barbacoa. You discover, in short, the vertical generosity of your space, which allows the building of new houses inside.”

- Antonio José Ponte, *An Art of Building Ruins*









51%

buildings within the UNESCO World Heritage Site exposed the pervasive impact of *barbacoas* on the structure



“When one sees the phenomenon from afar, one knows that the barbacoa is an assault on the building. One which places its structural stability in danger. But, at the same time, it is part of the vernacular heritage of the city. The barbacoas’ insolence in doing without architects makes us incapable of forgiving it for existing without us. How could we possibly recognize its value. This endangers it. If La Habana Vleja is restored, the barbacoa ceases to exist.”

- Orlando Inclán Castañeda,
Architect for the Office of the City Historian

Comparison

La Habana Vieja + Washington, DC

2017 Population Estimate:

La Habana Vieja: 95,400

Washington, DC: 681,700

Area:

La Habana Vieja: 4 km

Washington, DC: 177 km

Population Density:

La Habana Vieja: 23,850 / km²

Washington, DC: 3,850 / km²

Demographics of Havana



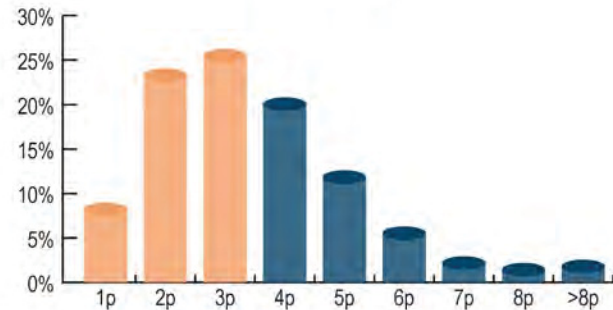
0-5 6-17 18-25 26-60 >60



Age Distribution



Household Size



20% are students



25% stay at home or are retired



50% of health problems reported are allergies

Housing Deficit Calculation for La Habana Vieja

Estimated Housing Deficit in La Habana:
200,000 units

Percentage of Population in La Habana
Vieja: 4.5%

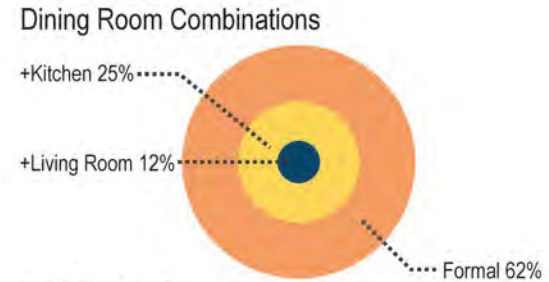
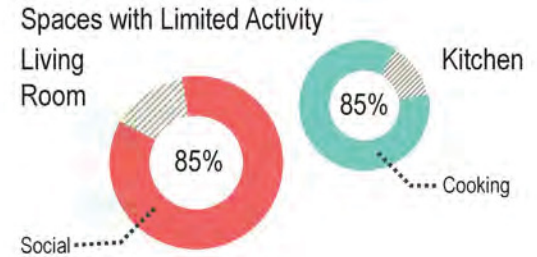
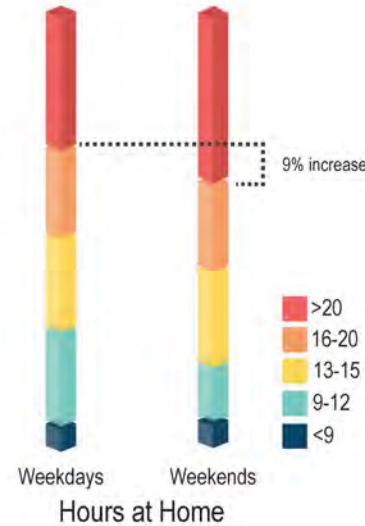
**Housing Deficit in La Habana Vieja:
9,085 units**

Average footprint of a housing unit: 60 m²

Total footprint of additional housing
required: 0.55 km²

**Percentage of City Footprint for
Additional Housing: 13.6%**

Survey of Home Life in Havana



Frequent Activities at Home



La ampliación es hacia fuera y dentro, con las barbacoas. El que invento eso de la barbacoa se quedó frío!



Gladys

The expansion is towards the exterior and interior, with the barbacoas. The one who came up with that barbacoa was astounded!

Se vuelve arquitecto aquí en Cuba... Luchando y trabajando, poco a poco lo logre. Y ahí está, me hice mi casa.



Aracelio

One becomes an architect here in Cuba... Striving and working for it, little by little, I accomplished it. And there it is, I made my house.

Se mezclan las dos arquitecturas, la del pasado y la de ahora. Si no, ya tu sabes, se cae esto a pedasos.



Idalmis

The two architectures are blended, the past and the present. If not, you know, this would fall to pieces.

Profiles | Resident Interviews



Considerations

Normas Cubanas | Codes

Plan Maestro | Master Plan

Cost of Construction

Tourism + *Casas Particulares*

Elemental Housing Precedent

Urban Farming + Food Security

Residential Building Codes

NORMA CUBANA



Experimental

102: 2001

- + define housing types and composition
- + describe spatial characteristics and circulation
- + provides direction for finishes, lighting, noise control, solar protection and ventilation
- + establishes requirements for life safety and minimum room dimensions
- + references relevant documents

EDIFICACIONES. VIVIENDAS DE MEDIANO Y ALTO ESTANDAR. REQUISITOS DE PROYECTO

Buildings. Medium and high standard dwellings. Project requirements

Las observaciones a la presente norma experimental deben ser dirigidas a la Oficina Nacional de Normalización, con copia al Ministerio de la Construcción, antes de marzo del 2003.

ICS: 91.040.30

1. Edición Marzo 2001

REPRODUCCION PROHIBIDA

Oficina Nacional de Normalización (NC) Calle E No. 261 Vedado, Ciudad de La Habana.
Teléf.: 30-0835 Fax: (537) 33-8048 E-mail: ncnorma@cenial.inf.cu

ANEXO A (normativo)

Espacios obligatorios- Áreas mínimas (m²)

Espacio	Tipos de viviendas								Lado mínimo (m)
	3D	2Dd	D2d	2D	Dd	D	E		
Estar	15,0	13,5	12,0	12,0	11,0	10,0	20,0		3,00
Comedor	12,0	11,0	10,0	10,0	9,5	9,0			2,70
Cocina	9,0	9,0	8,5	8,0	7,5	7,0			3,8
Patio o closet de servicio	4,0	4,0	3,0	3,0	3,0	2,4	1,3		1,20
Circulación									0,90
Dormitorio Doble (D)	11,0	11,0	11,0	11,0	11,0	11,0			2,70
Dormitorio Doble (D)	11,0	11,0		11,0					2,70
Dormitorio Doble (D)	11,0								2,70
Dormitorio Sencillo (d)		8,0	8,0		8,0				2,40
Dormitorio Sencillo (d)			8,0						2,40
Servicio sanitario para D	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9	1,40
Servicio sanitario para D	3,9	3,9			3,9				1,40
Servicio sanitario para D	3,9								1,40
Servicio sanitario para d			3,3	3,3		3,3			1,40
Servicio Sanitario para d				3,3					1,40
Servicio sanitario intercalado		3,9	3,9	3,9	3,9	3,9			1,40
Totales	84,7	80,8	78,6	75,3	71,0	68,3	62,8	57,2	53,9
Aproximado	85,0	81,0	79,0	75,0	71,0	68,0	63,0	57,0	54,0

NOTAS:

- El área asignada al estar y al comedor cuando se agrupan en un solo espacio, puede reducirse hasta un 10 % excepto en la vivienda tipo E.
- Para el almacenaje de ropa incluido en las áreas de dormitorio se ha considerado un volumen mínimo por persona equivalente a 0,90 m de ancho; 0,60 m de profundidad y 2,00 m de alto, para un volumen de 1,08 m³ por persona.
- Para el almacenamiento de viveres en la cocina se debe considerar un mínimo de 0,15 m³ por persona, que puede estar en un closet o en los muebles de la cocina.
- Cada vivienda debe contar con un almacenamiento de tipo general con un mínimo de 0,15 m³ por persona.
- En el caso de la vivienda tipo estudio el closet de servicio se ha considerado con las siguientes dimensiones, ancho 2,00 m, profundidad 0,50 m y altura 2,00 m y tendrá al final una superficie de utilización al frente del mismo.
- La circulación deberá ser el mínimo posible y no sobrepasará el 7 % del total del área de la vivienda.

Espacios opcionales - Algunas áreas mínimas (m²)

Espacios	Áreas (m ²)	Lado mínimo (m)
Dormitorio empleado	7,0	2,10
Servicio sanitario empleado	11	2,5
Servicio sanitario visitas	1,7	0,90
Vestíbulo	-	1,20
Pantriy o cocinilla	-	1,50
Vestidor	1,35 *	1,50
Balcón	0,63 *	0,70
Portal	-	1,50
Terraza	-	1,50
Otros locales de uso diverso	-	2,10
Trasteros	0,72 *	0,60

Plan Maestro

Office of the City Historian

PEDI 2020
Strategic Plan for Integral Development

Housing Objectives + Indicators

Density: minimum of 200 residents / hectare

Diversify housing stock: accommodate average household size

Building conditions: improve quality of housing

Building footprint: mixed-use residential

	1. OBJETIVOS ESTRATÉGICOS / LINEAMIENTOS	2. CARACTERIZACIÓN / DIAGNÓSTICO	3. DATOS / IND. ACT.	CRITERIOS DE ORDENAMIENTO URBANO	5. INDICADOR PROPUESTO	Imágenes	
2. ORDENAMIENTO DEL TERRITORIO 2.2. VIVIENDA	2.2.1. DENSIDAD HABITACIONAL						
	2.2.1.1. Mantener la actividad habitacional en el Centro Histórico, garantizando indicadores adecuados de densidad y un equilibrio en la distribución territorial.	2.2.1.2. En el periodo colonial la ciudad Intramuros albergaba unos 40 mil habitantes, elevándose notoriamente las densidades, hasta alcanzar una población de unos 70 mil habitantes hacia 1940. reducción del umbral de población, el que se ha mantenido alrededor de 60 mil habitantes en los últimos años. El proyecto de recuperación urbana que se lleva a cabo en el Centro Histórico desde 1981, ha consagrado como una de sus políticas más importantes la conservación de la población, el carácter residencial y las relaciones sociales tradicionales, a partir de acciones de construcción y rehabilitación de viviendas para los residentes, evitando procesos de desplazamiento y gentrificación, tan frecuentes en otros similares. De igual forma, se han tomado medidas para lograr que los nuevos edificios de viviendas cumplan con los niveles adecuados de distribución en las diferentes zonas, evitando los desbalances sociales y funcionales a nivel territorial. El decrecimiento poblacional manifestado en los últimos años se debe a la reducción de densidades en las ciudades rehabilitadas para viviendas adecuadas o recuperadas con fines diferentes, para lo cual se han construido viviendas fuera del Centro Histórico.	2.2.1.3. Densidad: 300 habitantes por hectárea	2.2.1.4. Aun cuando el plan prevé una importante actividad habitacional en todo el Centro Histórico, se establecen indicadores diferenciados para cada uno de los diversos sectores que conforman el territorio, con niveles altos en los SPR y en el SCS. Habrá niveles medios en aquellos Ejes Comerciales y de Servicios, y en los Ejes de Interconexión, que forman parte del Sistema de Centralidad Principal, en los que predomina la actividad de vivienda en las plantas altas, así como comercios y servicios en plantas bajas. El plan obliga al cumplimiento de umbrales mínimos de vivienda en sectores reconocidos por su alto valor turístico y de alcance metropolitanos, destacando en el SCP el Sistema de Plazas y de plazuelas de borde, así como los Ejes de Borde Prado y Ave. del Puerto – San Pedro – Desamparados. A otra escala, el Plan establece, conjuntamente con las Regulaciones Urbanas, la construcción y rehabilitación de viviendas en la mayor parte de las plantas altas de los inmuebles y en plantas bajas de calles de carácter local, exceptuando locales esquineros.	2.2.1.5 Densidad: mínima 200 hab. por hectárea		
	2.2.2. PROGRAMAS						
	2.2.2.1. Diversificar los programas de vivienda, para dar respuesta a la compleja realidad habitacional del territorio.	2.2.2.2. El proceso de recuperación de viviendas ha dado un salto cualitativo en los últimos años, pasando de criterios generales de intervención a una especificidad que toma en cuenta las características y la problemática que enfrenta el Centro Histórico en esta materia. En este sentido, se promueve la construcción de viviendas en proporción al tamaño y composición de las familias (núcleo promedio de 3 habitantes por vivienda), adecuadas para adultos mayores (un segmento singular y creciente de la población), y otras modalidades que garantizan la movilidad familiar y una mayor eficacia en el proceso de recuperación de los inmuebles, además de la reintegración de las familias en las nuevas viviendas, como es el caso de las viviendas de tránsito. A pesar de los avances logrados en esta materia, es evidente, sin embargo, que no se explotan una serie de mecanismos (organizativos, financieros) que podrían redundar en mayores opciones para favorecer el acceso a nuevas viviendas de sectores más amplios y diversos del universo poblacional.	2.2.2.3. Promedio: 5.1 habitantes por ?	2.2.2.4. Se propone la diversificación de los programas de vivienda en la totalidad del Centro Histórico, considerando el carácter eminentemente habitacional de este y favoreciendo la concentración de determinados tipos de viviendas, según los sistemas de centralidad: viviendas hoteleras o vivienda taller (estudios de artistas y artesanos, estudiantes, núcleos unipersonales) que pueden desarrollarse sobre el SCP y el SCS; viviendas especiales (tercera edad), principalmente asociadas al SCS, para acercar los adultos mayores a los servicios comunitarios que se concentrarán en este sistema y en el caso de Immobiliarias de vivienda; éstas se ubicarán sobre el SCP.	2.2.2.5 Composición de las viviendas: 20% 1 hab. 50% 2 hab. 30% 3 hab.		
	2.2.3. HABITABILIDAD Garantizar niveles óptimos de habitabilidad a partir del estudio de las tipologías arquitectónicas existentes, fomentando la actividad en ciertas tipologías y limitándola o adaptándola en otras.						
	2.2.3.1. Garantizar niveles óptimos de habitabilidad a partir del estudio de las tipologías arquitectónicas existentes, fomentando la actividad en ciertas tipologías y limitándola o adaptándola en otras.	2.2.3.2. Existe una gran diversidad del fondo edificado para viviendas, con un 50% en mal estado técnico constructivo asociado sobre todo, a transformaciones severas de las tipologías tradicionales que han provocado condiciones adversas de habitabilidad. Tal es el caso de ciudadelas y cuarterías tugurizadas y antiguos locales comerciales y de servicios convertidos en viviendas, que adolecen de condiciones de iluminación y ventilación. En los últimos años se han fortalecido los mecanismos de gestión para lograr la obtención de un mayor número de viviendas en inmuebles adecuados, al tiempo que se restringe en aquellos que no reúnen las características apropiadas. A pesar de los ingentes esfuerzos realizados, aún persisten miles de familias viviendo en malas condiciones. La clasificación tipológica -funcional y espacial- de la totalidad de los inmuebles del Centro Histórico, establece en cada caso su potencial de uso y de transformación para acomodar viviendas adecuadas, así como las tipologías que no admiten esa función. El estudio tipológico ha detectado el predominio de tipologías arquitectónicas en cada uno de los diferentes sectores urbanos susceptibles de mantener o adaptar la función residencial que garantice el desarrollo de la actividad en todo el territorio, lo cual ha de tomarse en cuenta.	2.2.3.3. 50% de viviendas en ciudadelas	2.2.3.4. Se fomentará la rehabilitación de ciudadelas y cuarterías para transformarlas en casas de apartamentos, se desestimulará la localización de viviendas en locales de esquina y en aquellos otros que no tengan condiciones de habitabilidad, y que forman parte de la tipología doméstica mixta. En todas las tipologías domésticas se podrá desarrollar la función habitacional como preferente, especificándose en cada caso las más adecuadas, atendiendo al carácter unifamiliar, multifamiliar, especial o de arrendamiento inmobiliario que tengan las viviendas a proyectar. En las tipologías civil - pública, y en la industrial, se prohíbe la adaptación a viviendas, exceptuándose las industriales tipo nave, donde la transformación a viviendas se admite con carácter restringido. En las tipologías religiosas, es posible desarrollar viviendas en las reconocidas como convento. En las tipologías militares se prohíbe la función residencial.	2.2.3.5 90% de las viviendas, Tipología doméstica.		
2.2.4. EXPLOTACIÓN RACIONAL DEL SUELO							
2.2.4.1. Lograr una explotación racional del suelo urbano, con la implementación de normas y estándares de vivienda acordes a la singularidad del territorio.	3.2.4.2. Por años la construcción de nuevas viviendas restó importancia al valor y potencial del suelo. Esto se hacía evidente con la construcción de numerosos edificios de baja altura y limitada cantidad de viviendas, o por la obtención de viviendas con dimensiones relativamente grandes, lo que obviamente beneficiaba indirectamente a ciertas familias en detrimento de otras. En la actualidad, ya se concede una creciente importancia a la construcción de nuevas viviendas con estándares más adecuados de espacialidad y número de habitaciones, tomando en cuenta la caracterización demográfica del territorio, las características del parcelario y los inmuebles, así como la demanda que se requiere. Considerado como un criterio fundamental dentro de la estrategia de sostenibilidad ambiental, estas medidas están encaminadas a mantener los niveles de densidad poblacional previstos por el Plan.	3.2.4.4. Las Regulaciones Urbanas tendrán en cuenta un tratamiento diferenciado para cada uno de los sectores que conforman el territorio, estableciendo funciones, alturas totales y niveles de intensidad propios para cada uno, lo que resultará en un mayor aprovechamiento del suelo, ajustado a las características urbanísticas de cada zona. En este sentido, se ejecuta y promueven mayores intensidades de uso en la zona extramuros y ejes de borde, mientras se desarrollan intensidades medias y bajas en la antigua ciudad intramuros, y especialmente en los sectores ubicados al sur del territorio. De esta manera, debe promoverse la ejecución de edificios de nueva planta alcanzando mayores alturas, permitiendo niveles retranqueados en azoteas y la obtención de mas plantas hacia el interior de la parcela, que no tienen que ajustarse obligatoriamente a los puentes establecidos para las fachadas, lo cual supone la creación de un número mayor de unidades de vivienda, sin menoscabo de la preservación de los valores urbanísticos.	2.2.4.5 Regulación del metraje: Viv. 1 Hab 50-60 m ² Viv. 2 Hab 60-75 m ² Viv. 1 Hab 75-85 m ²				



LEGEND

- PROTECTION GRADE I
- PROTECTION GRADE II
- PRIMARY RESIDENTIAL ZONES
- LIMIT OF HISTORIC CENTER

Preservation Priorities and Residential Sectors



LEGEND

- HOUSING IN ADEQUATE STATE
- NEW CONSTRUCTION
- PHASE I
- PHASE II
- PHASE III
- EMERGENCY STATE
- PRIORITY GRADE I
- PRIORITY GRADE II
- LIMIT OF HISTORIC CENTER

Residential Areas in Distress and Potential Developments



LEGEND

- COMMUNITY FACILITIES
- EDUCATION
- HEALTH
- SPORT + RECREATION
- PROPOSED FACILITIES
- LIMIT OF HISTORIC CENTER

Community Facilities and Services

LEGEND

- CULTURAL
- CREATIVE INDUSTRIES
- EDUCATIONAL
- RECREATIONAL
- MIXED USE ZONE

- COMMERCIAL | GASTRONOMY
- ADMINISTRATIVE
- TRANSPORTATION
- COMMUNITY SERVICES
- COMMUNITY SERVICES (IN PROGRESS)
- DEGRADED ZONE
- UNIVERSITY CAMPUS
- LIMIT OF HISTORIC CENTER



Schematic of Primary Functions - Existing



LEGEND

- CULTURAL
- CREATIVE INDUSTRIES
- EDUCATIONAL
- RECREATIONAL
- COMMERCIAL | GASTRONOMY
- ADMINISTRATIVE
- TRANSPORTATION
- COMMUNITY SERVICES
- UNIVERSITY CAMPUS
- LIMIT OF HISTORIC CENTER



Schematic of Primary Functions - Proposed



LEGEND

- NODES OF PRIMARY INTEREST
- NODES OF PRIMARY INTEREST (IN PROGRESS)
- NODES OF SECONDARY INTEREST
- NODES OF SECONDARY INTEREST (IN PROGRESS)
- ZONES SURROUNDING NODES
- POINTS OF INTEREST
- LANDMARKS
- CONNECTING AXIS
- CONNECTING AXIS (IN PROGRESS)
- ➔ PRIMARY ACCESS
- LIMIT OF HISTORIC CENTER

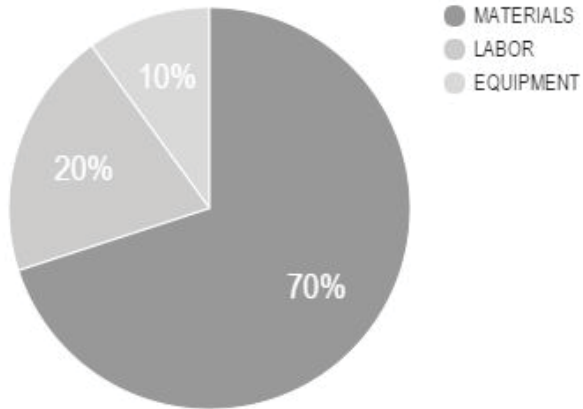


- | PRIMARY NODES | SECONDARY NODES |
|--------------------------|---------------------------|
| 1 PLAZA DE LA CATEDRAL | 9 LA PUNTA |
| 2 PLAZA DE ARMAS | 10 ANFITHEATRO |
| 3 PLAZA DE SAN FRANCISCO | 11 ADUANA |
| 4 PLAZA VIEJA | 12 ALAMEDA DE PAULA |
| 5 PLAZA DEL CRISTO | 13 ALMACENES SAN JOSE |
| 6 PASEO DEL PRADO | 14 ESTACION CENTRAL |
| 7 PARQUE CENTRAL | 15 FFCC |
| 8 CAPITOLIO NACIONAL | 16 MUSEO DE LA REVOLUCION |
| | 17 MANZANA 148 |
| | 17 BELEN |

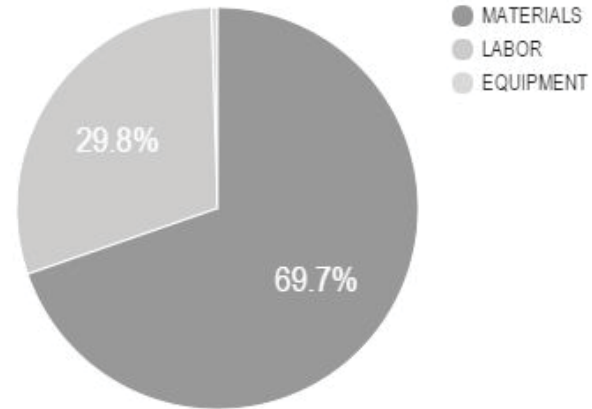
Areas of Interest and Surrounding Areas

Housing Construction Cost Comparison

HOUSING CONSTRUCTION COST | OFFICIAL



HOUSING CONSTRUCTION COST | SELF-EFFORT



Cost of Construction

Estimate for a 60 m² unit
in Havana at market cost

Site + Permitting: \$100

Materials: \$5,400

Labor: \$1,500

Equipment: \$800

Total Cost: \$7,800

Area Cost: \$130 / m²

Viability of Self-Effort Construction

Monthly Salary: \$26

Working Years: 42 - 47

Life Expectancy: 80 years

<http://data.worldbank.org/country/cuba>

Cost of Construction: \$7,800

**Annual Salary:
\$312**

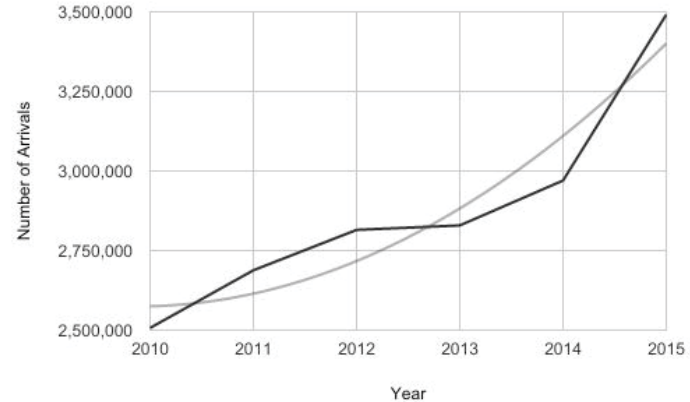
**Payback Period:
25 years**

Tourism

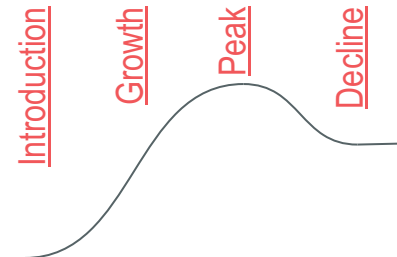
Invest in housing over hotels and design units to provide rental opportunities to tourists during periods of increased demand

The model of demand behavior illustrates why the Casa Particular model should be implemented for housing to anticipate tourism demands and accommodate locals

Tourism to Cuba



Demand Behavior



Casa Particular

Homestay arrangements can be independent apartments or private rooms in a residence

A stay at a *Casa Particular* averages between \$10-\$30

Hotels range between \$60-\$400+ nightly

In La Habana Vieja, hotel rooms have increased over 125% in price between December 2014 and January 2017

Cuba has become one of the most expensive cities in the world for hotel accommodations

Airbnb in Cuba

In less than a year, 13,000 guests from all 50 states were hosted by Airbnb

Cuba is the fastest growing market in Airbnb history

Approximately 4,000 casa particulares were added in the year following the launch

Airbnb hosts have earned an average of \$250 per booking

<https://qz.com/314567/what-to-expect-on-your-first-trip-to-cuba/>

<https://press.atairbnb.com/airbnb-now-welcomes-guests-from-around-the-world-in-cuba/>

Viability of *Casa Particular*

Nightly rate: \$25

Peak Season: December - March

Occupancy Rate: 75% during peak (84 nights)

25% during low tourism season (63 nights)

Nights Occupied (total): 147

Annual Income: \$3,675

To put it into perspective, the construction of each new hotel room is estimated to cost \$200,000

**Cost of Construction: \$7,800
+ \$1,300 = \$9,100**

**Annual Income from Rent:
\$3,675**

**Payback Period:
2.5 years**



Elemental Housing Precedent



Elemental Housing Precedent

Out of the 3 billion people living in cities today, 1 billion is under the line of poverty. By 2030 out of the 5 billion people that will be living in cities, 2 billion are going to be under the line of poverty. That means that we will have to build a 1 million people city per week with 10,000 dollars per family. Given the magnitude of the housing shortage, we won't solve this problem unless we add people's own resources and building capacity to that of governments and market. That is why we thought of putting in place an OPEN SYSTEM able to channel all the available forces at play. In that way people will be part of the solution and not part of the problem.

On the other hand, it is a fact that available resources are not enough. To face such scarcity of means, the market tends to do two things: Reduce and Displace; reduce the size of the houses, threatening the quality of life of its inhabitants, and displace them to underserved peripheries where land costs nothing, segregating people from the opportunities that made them come to cities in the first place. In order to face scarcity we propose a principle of INCREMENTALITY.

If you can't do everything, focus on:

- A. What is more difficult
- B. What cannot be done individually
- C. What will guarantee the common good in the future

We identified 5 design conditions as the ABC of incremental housing:

1. Good location: dense enough projects able to pay for expensive well located sites.
2. Harmonious growth in time: build strategically the first half (partition structural and firewalls, bathroom, kitchen, stairs, roof) so that expansion happens thanks to the design and not despite it. Frame individual performances and actions, so that we get a customisation instead of deterioration of the neighborhood.
3. Urban layout: introduce in between private space (lot) and public space (street), the collective space, not bigger than 25 families, so that social agreements can be maintained.
4. Provide structure for the final scenario of growth (middle class) and not just for the initial one.
5. Middle-class DNA: plan for a final scenario of at least 72m² or 4 bedrooms (3x3m) with space for closet or double bed, bathrooms should not be at the front door (which is the typical case to save pipes) but where bedrooms are; they may include a bathtub and not just a shower receptacle and space for washing machine; there should be possibility of parking place for a car. None of this is even close to be the case in social housing nowadays.

In other words, make sure you balance: low-rise high density,



without overcrowding, with possibility of expansion (from social housing to middle class dwelling)

HERE you will find 4 examples, with four different designs that pursue the same goals and principles. From now on they are public knowledge, an open source that we hope will be able to rule out one more excuse for why markets and governments don't move in this direction to tackle the challenge of massive rapid urbanisation. These designs may require to be adjusted to comply with local regulations and structural codes, follow local realities and use pertinent building materials. But they are knowledge that we have tested, that has proved to be beneficial to communities and that have been implemented accepting very pressing budget and policy constraints.



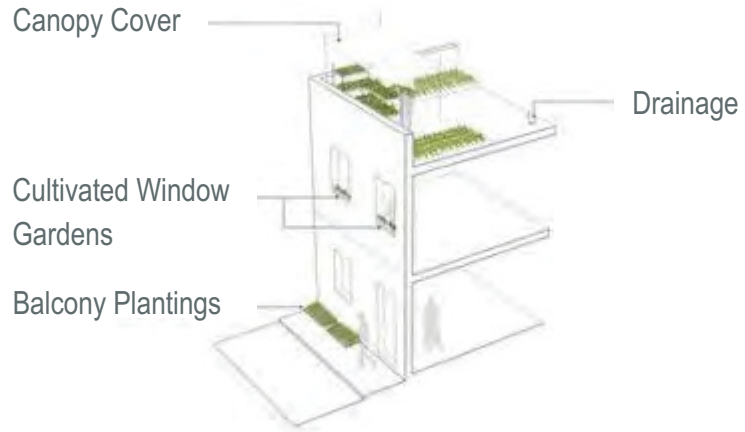
Urban Farming



90%

food consumed in La Habana Vieja is harvested within the province of Havana

Urban Farming



Local Crops

Viandas: sweet potato, yucca, squash, yams

Vegetables: Chinese cabbage, beans, lettuce, cucumber, plantain, tomato, okra, beet, turnip, carrots, potatoes, onions, garlic, peppers

Herbs: parsley, oregano, thyme Grains: maize, rice, taro tubers, lemongrass, mint, chamomile

Flowers: aster, sunflowers, gladiolus, marigold

Fruits: avocado, guava, lemon, coconut, orange, lime, pineapple, mango

Other: honey, soil, seeds





The Proposal

Site Selection

Site Analysis

Site Photography

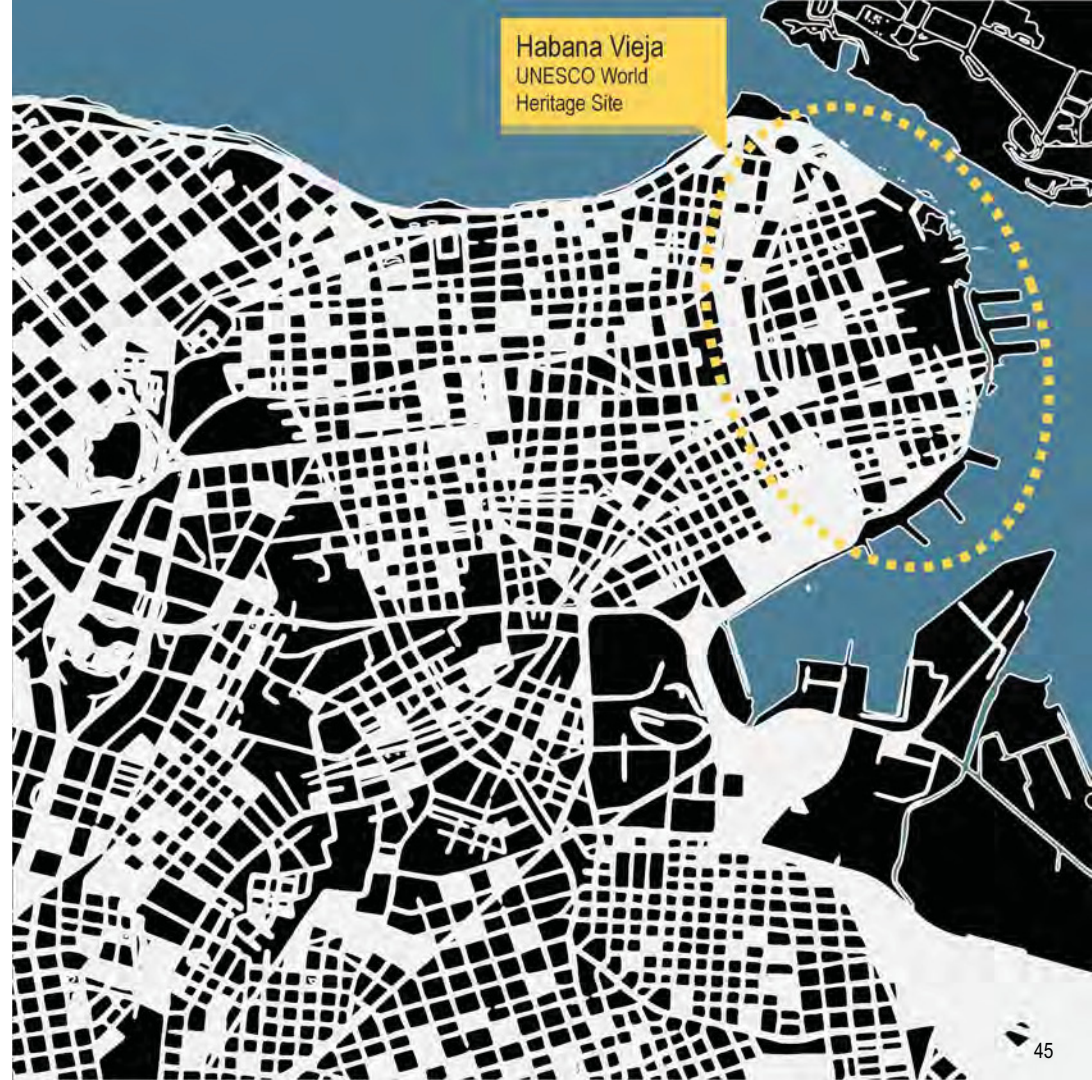
Site Plan

Diagrams

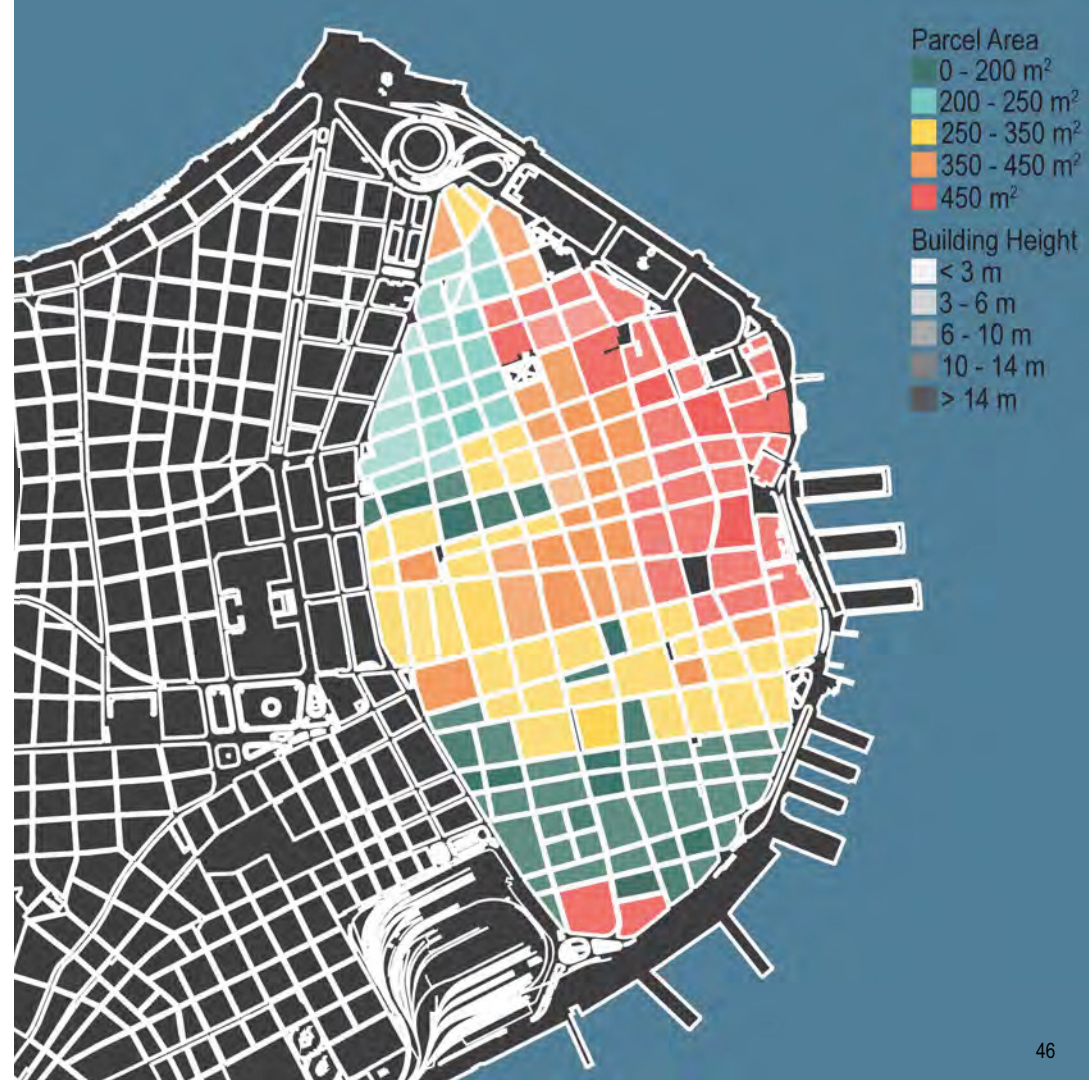
Proximity



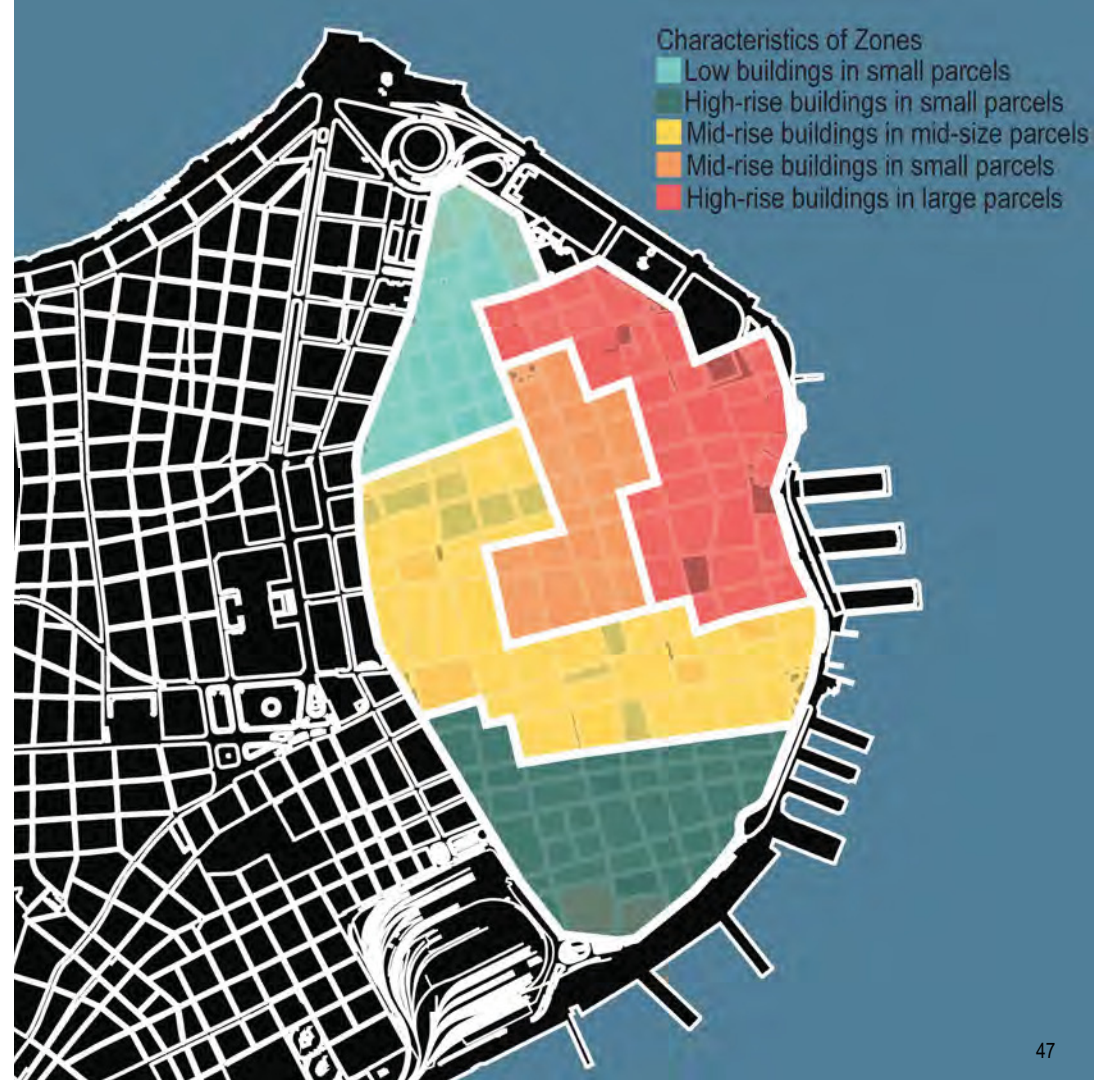
Historic Designation



Morphology by Block



Morphology by Zone



Site Location







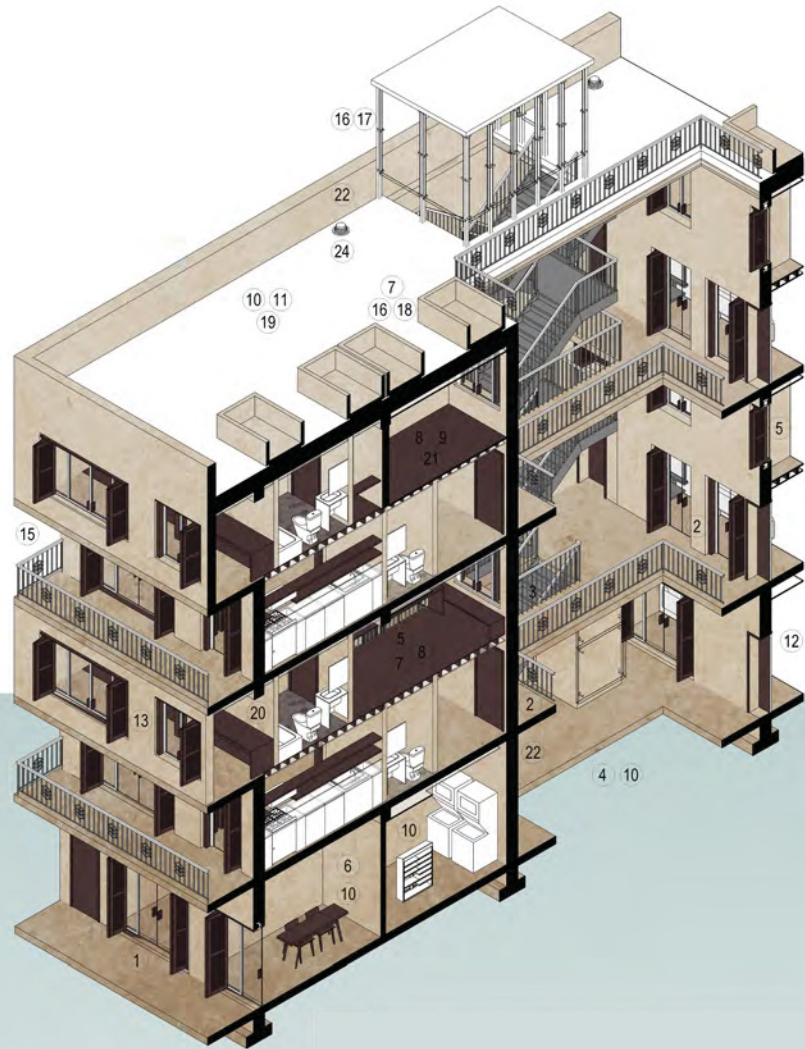


Street Perspective of Design Proposal



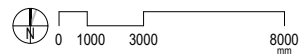
AXONOMETRIC ELEMENTS + FEATURES

- 1 ZAGUAN | VESTIBULE
- 2 GALLERIA | GALLERY
- 3 PASILLO | CORRIDOR
- 4 PATIO | COURTYARD
- 5 BARBACOA | MEZZANINE
- 6 COMMERCIAL SPACE
- 7 PRODUCTIVE SPACE
- 8 PRIVATE SPACE
- 9 RENTABLE SPACE
- 10 SHARED SPACE
- 11 TECHO PLANO | FLAT ROOF
- 12 PUNTAL | HIGH CEILING
- 13 PERSIANAS | LOUVERS
- 15 BALCON | BALCONY
- 16 VEGETATION
- 17 COVERED TRELLIS SYSTEM AROUND STAIRS
- 18 PLANTERS FOR ROOFTOP FARMING
- 19 WHITE ROOF ON CONCRETE SLAB
- 20 PRECAST CONCRETE BEAMS
- 21 WOOD FLOOR ON TIMBER FRAMING
- 22 CONCRETE MASONRY WALL
- 24 ROOF DRAIN



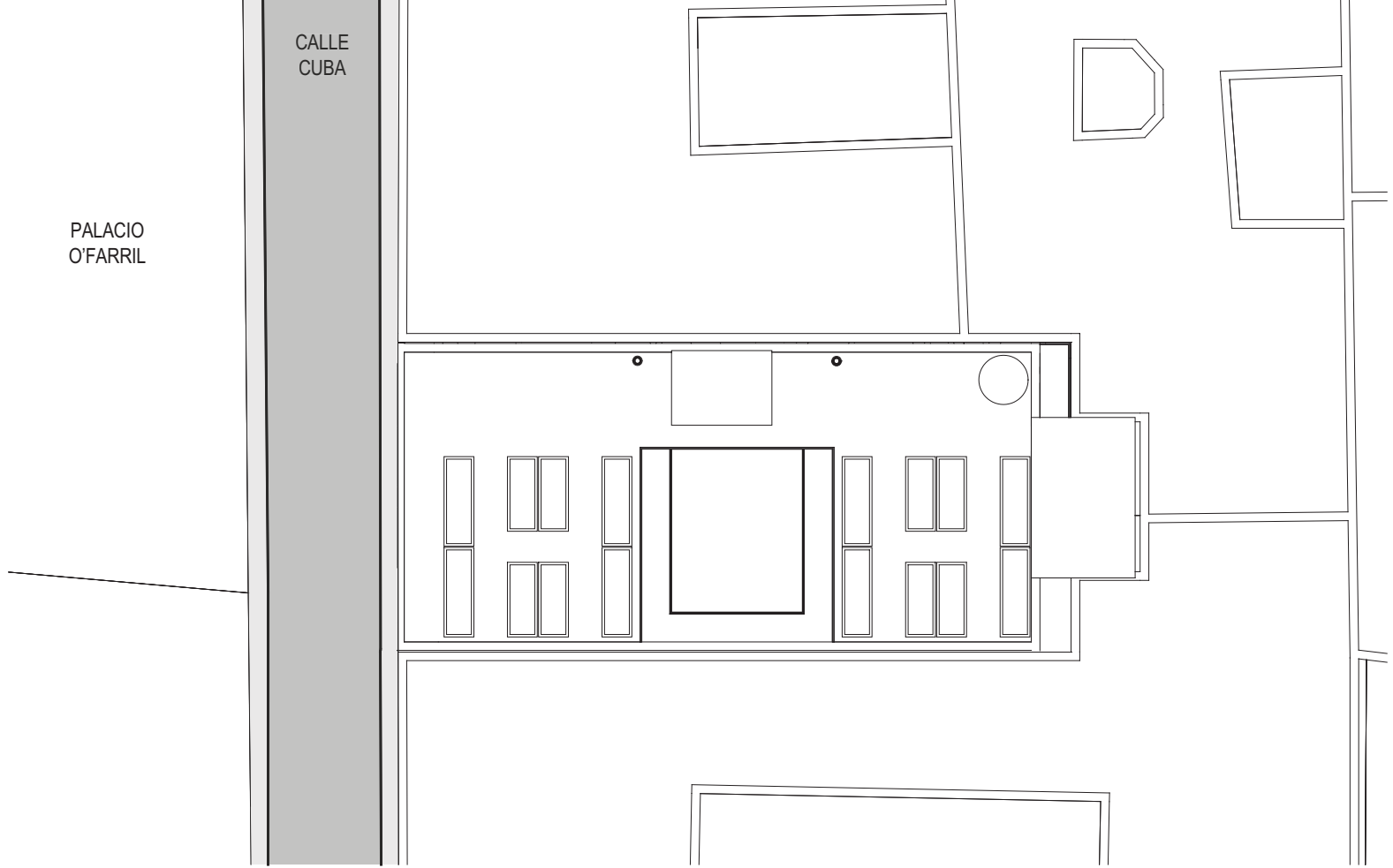


VICINITY PLAN

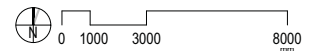


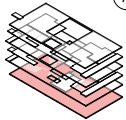
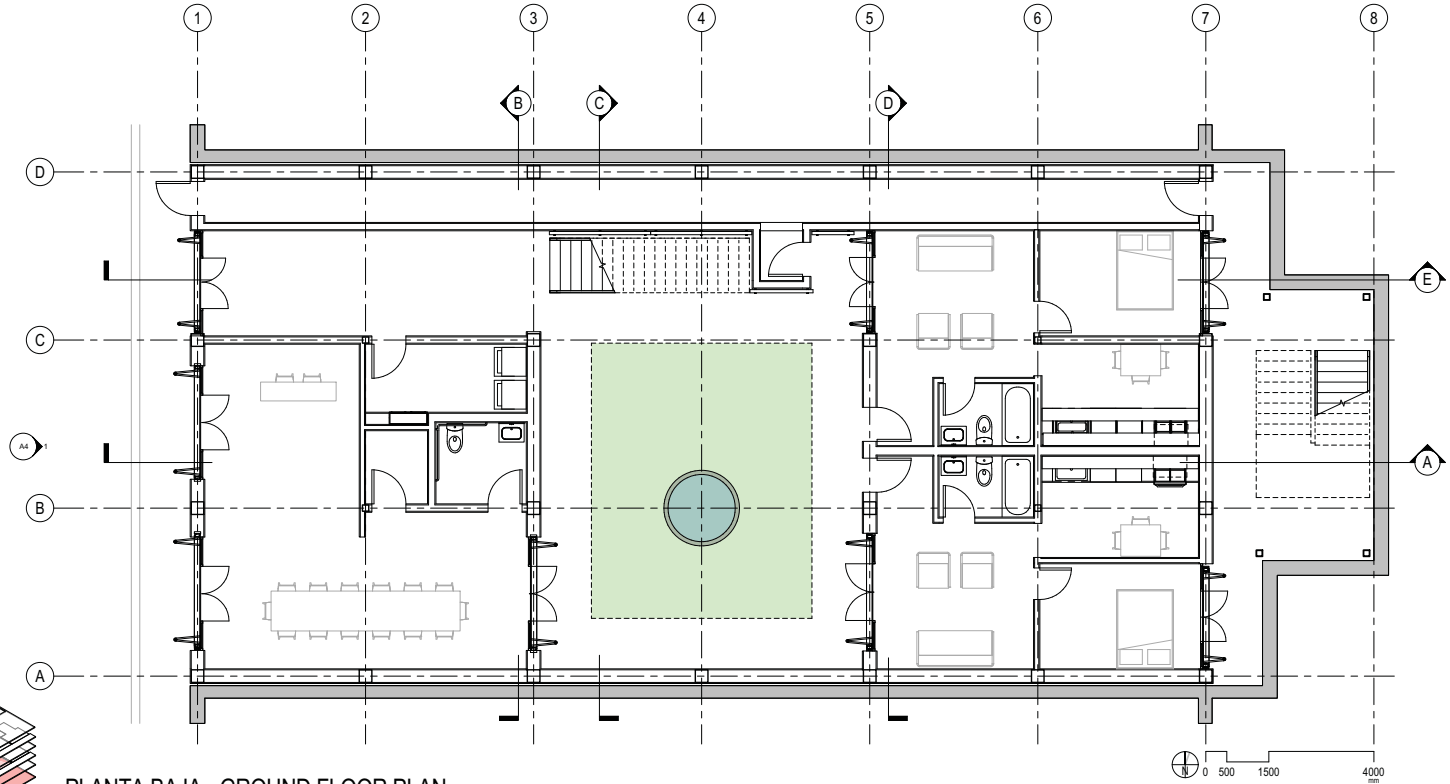
CALLE
CUBA

PALACIO
O'FARRIL

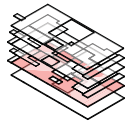
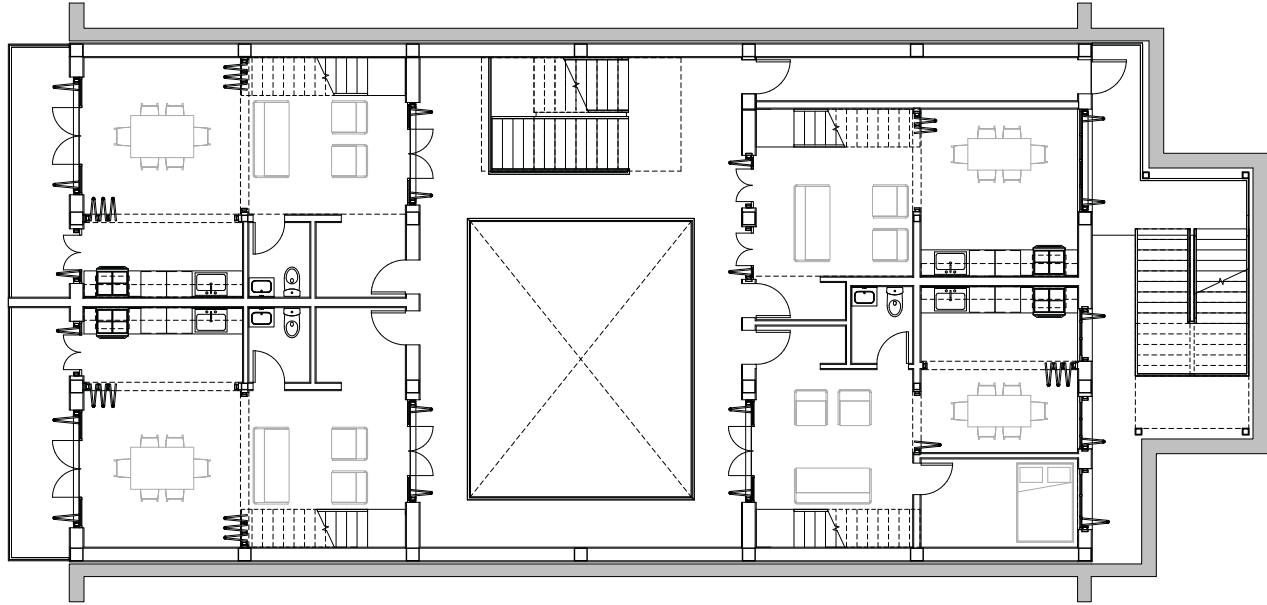


SITE PLAN



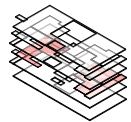
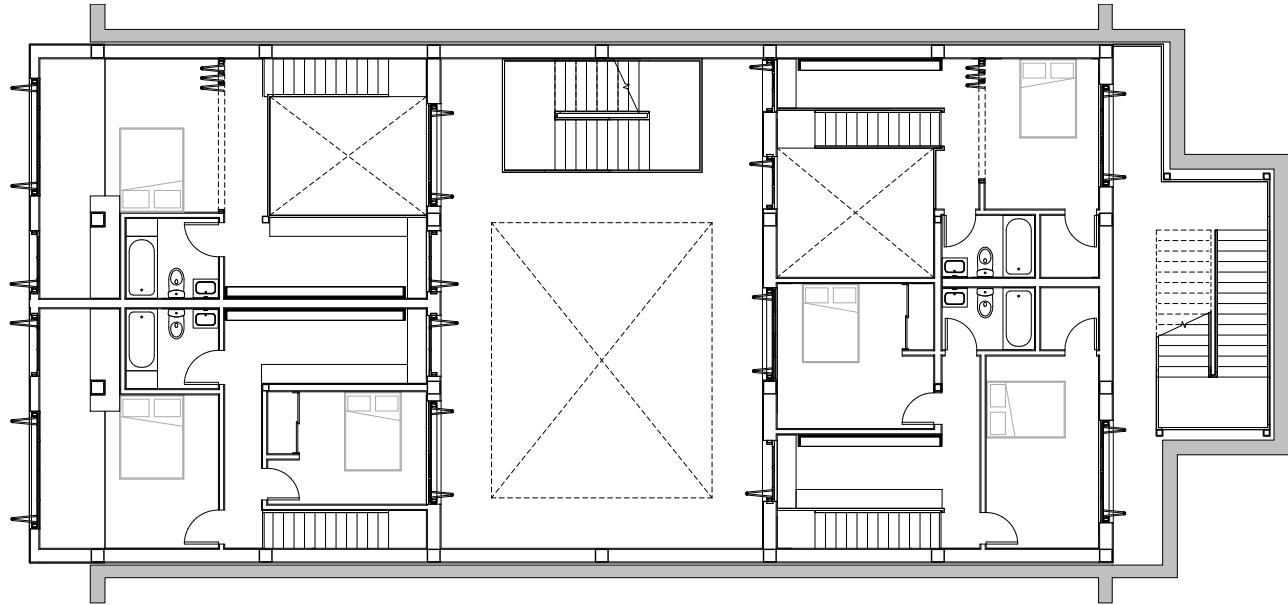


PLANTA BAJA - GROUND FLOOR PLAN

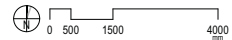


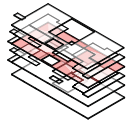
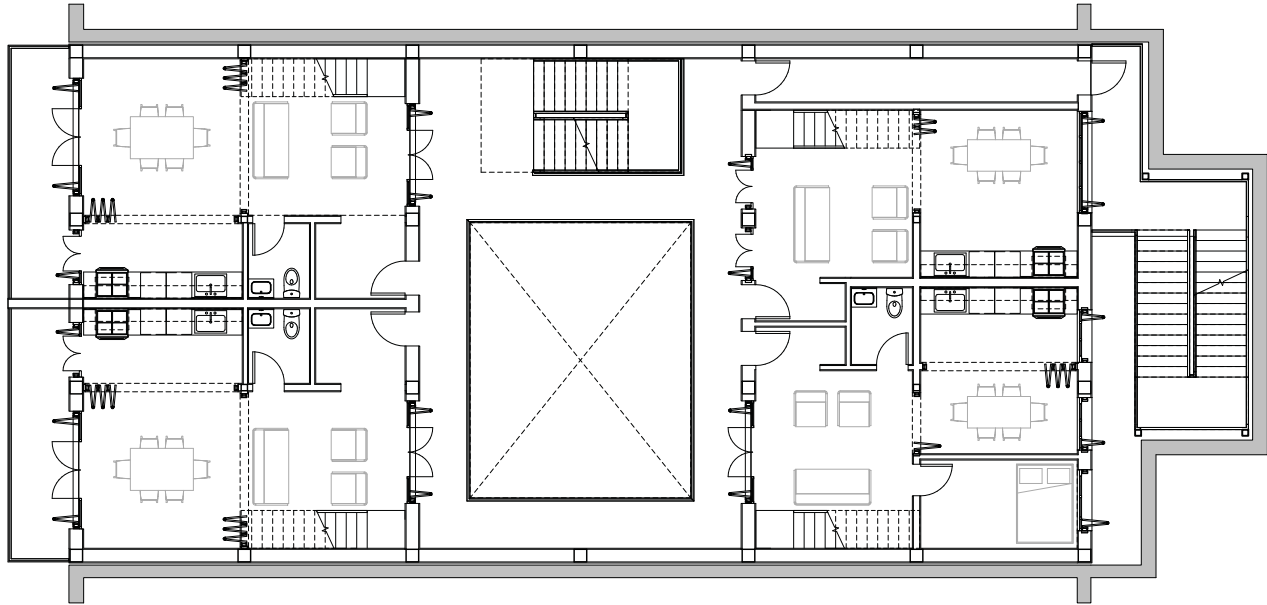
PLANTA PRIMERA - FIRST FLOOR PLAN





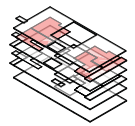
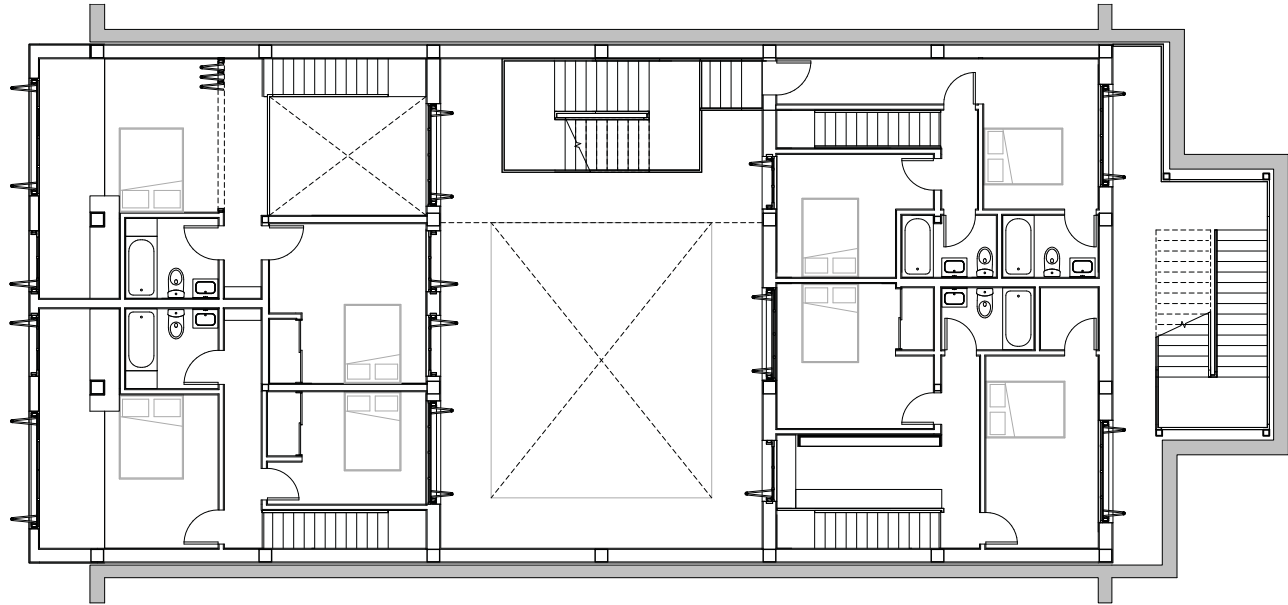
BARBACOA - LOFT PLAN





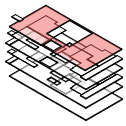
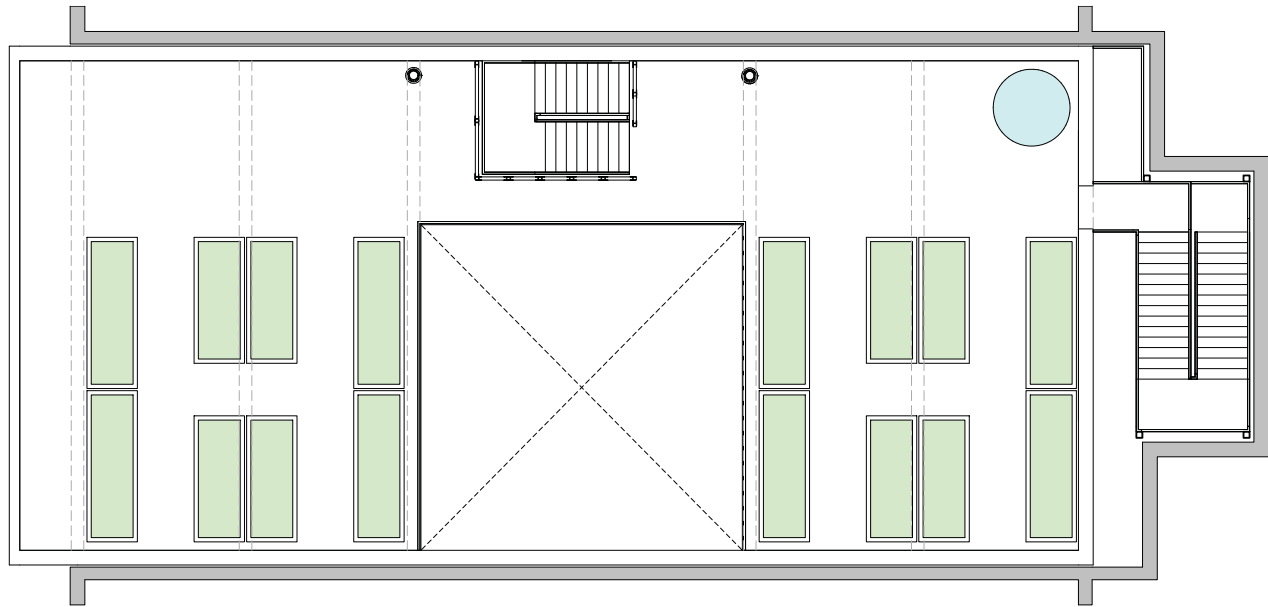
PLANTA ALTA - UPPER FLOOR PLAN



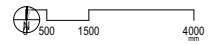


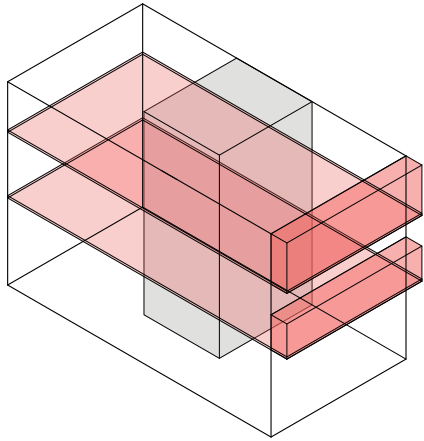
ENTRESUELO - MEZZANINE PLAN



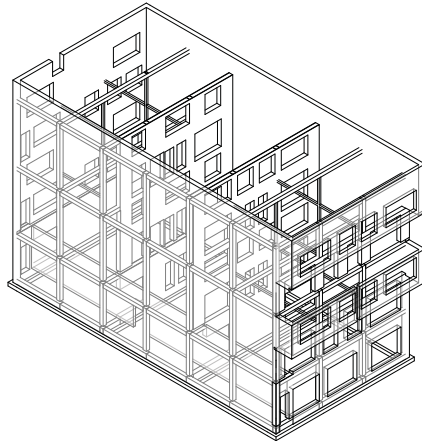


TECHO - ROOF PLAN

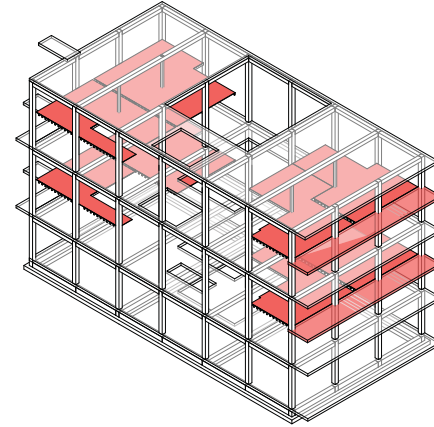




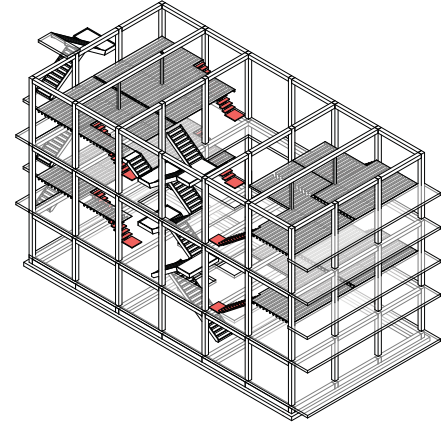
MASSING + TRANSFORMATIONS



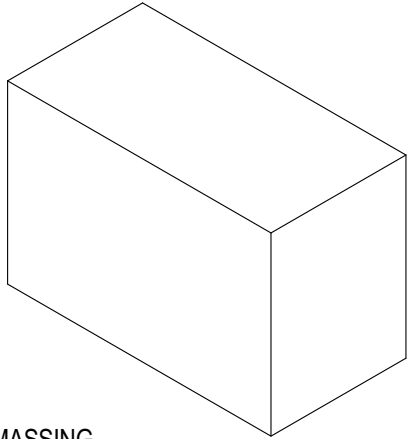
STRUCTURE + WALL OPENINGS



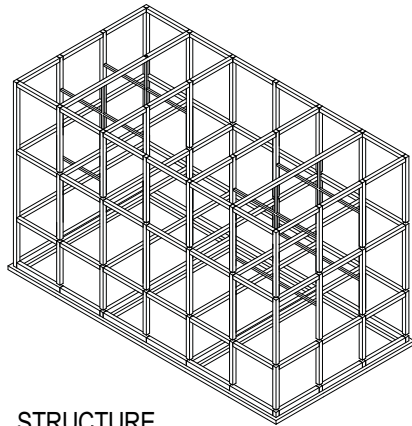
FLOOR PLATES + BARBACOAS



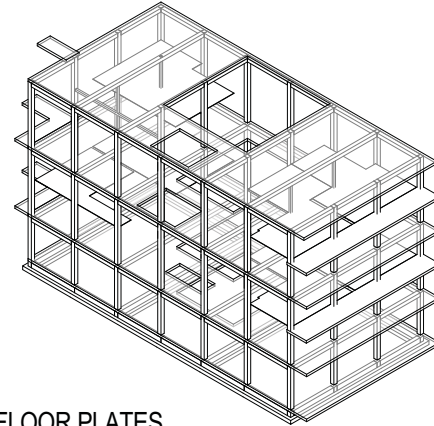
STAIRS + BARBACOAS



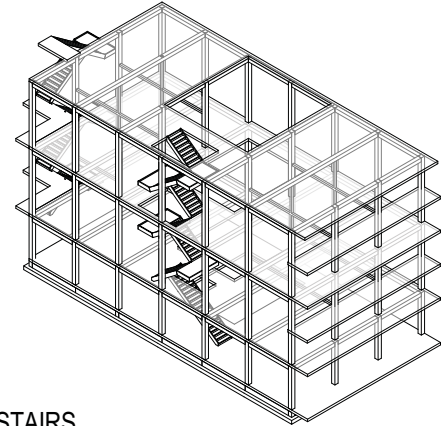
MASSING



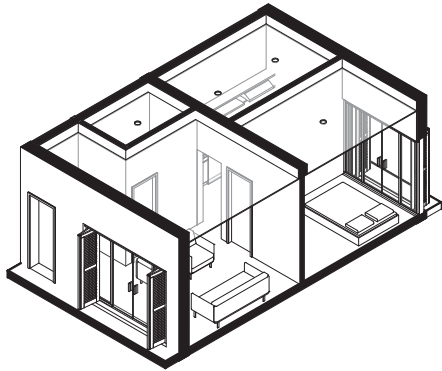
STRUCTURE



FLOOR PLATES

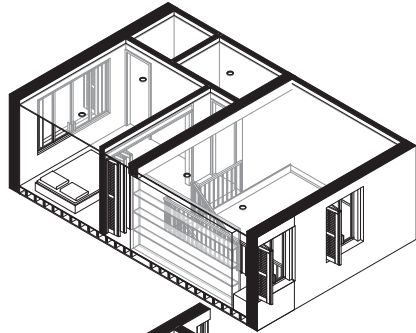


STAIRS



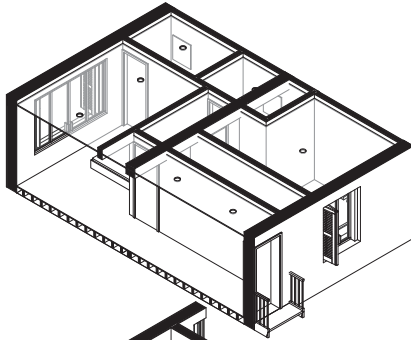
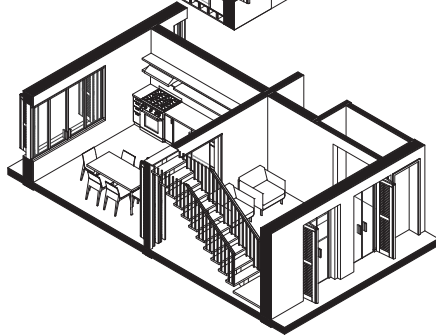
APT. A

40 M²
 1 BEDROOM
 PRIVATE SPACE
 PATIO | COURTYARD
 PUNTAL | HIGH CEILINGS



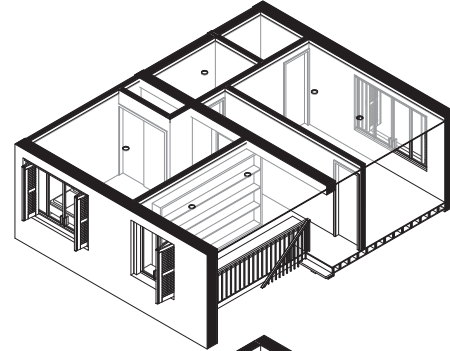
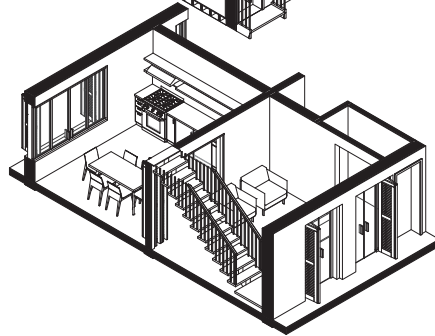
APT. B - BARBACOA

60 M²
 1 BEDROOM
 PRIVATE SPACE
 PRODUCTIVE SPACE
 PUNTAL | HIGH CEILINGS
 GALLERIA | GALLERY



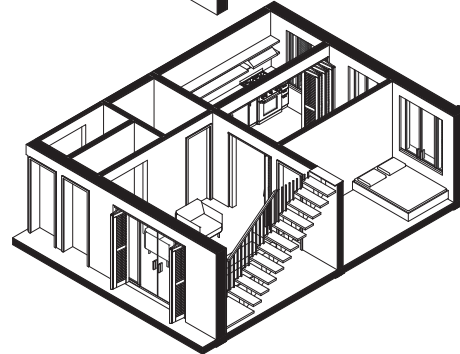
APT. C - ENTRESUELO

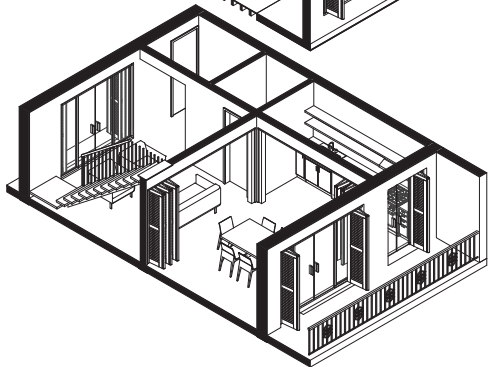
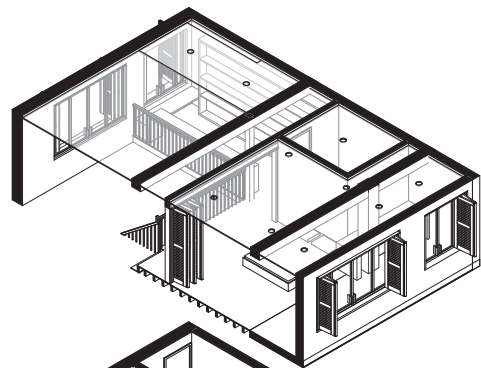
70 M²
 2 BEDROOMS
 PRIVATE | RENTABLE SPACE
 SEPARATE ENTRANCE
 GALLERIA | GALLERY



APT. D - ENTRESUELO

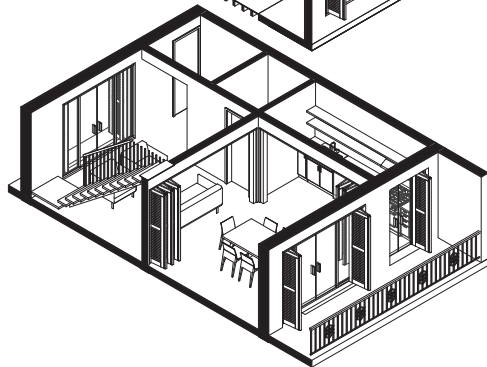
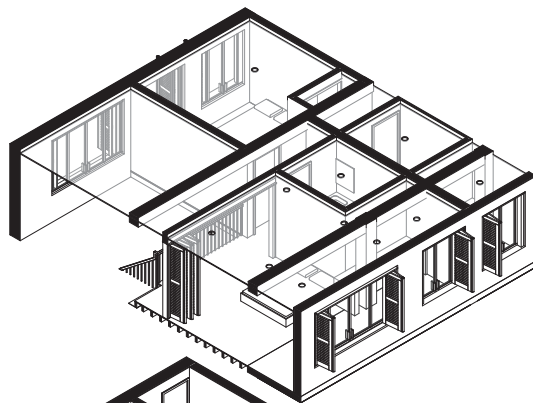
90 M²
 2 BEDROOMS
 PRIVATE | RENTABLE SPACE
 PRODUCTIVE SPACE
 PUNTAL | HIGH CEILINGS
 GALLERIA | GALLERY





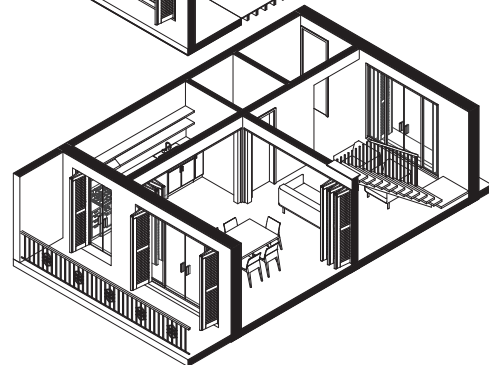
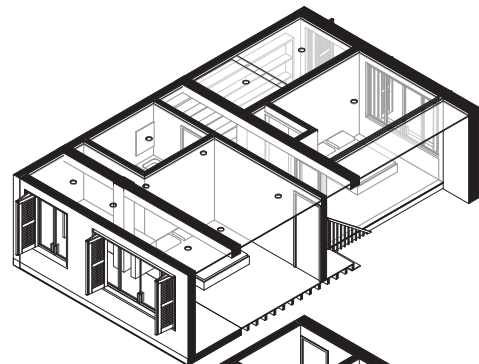
APT. E - BARBACOA

84 M²
 1 BEDROOM
 PRIVATE SPACE
 PRODUCTIVE SPACE
 PUNTAL | HIGH CEILING
 BALCON | BALCONY



APT. F - BARBACOA

90 M²
 2 BEDROOMS
 PRIVATE | RENTABLE SPACE
 PUNTAL | HIGH CEILING
 BALCON | BALCONY

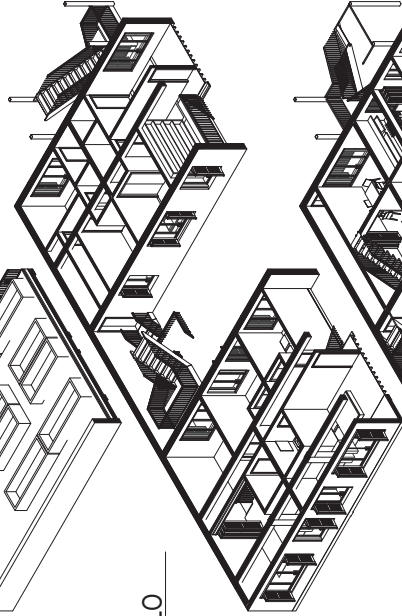


APT. G - ENTRESUELO

94 M²
 2 BEDROOMS
 PRIVATE | RENTABLE SPACE
 PRODUCTIVE SPACE
 BALCON | BALCONY

TECHO

245 M²
PRODUCTIVE SPACE
SHARED SPACE
TECHO PLANO | FLAT ROOF
VEGETATION
COVERED TRELLIS SYSTEM AROUND STAIRS
PLANTERS FOR ROOF TOP FARMING
CONCRETE SLAB
CONCRETE MASONRY PARAPET
ROOF DRAIN

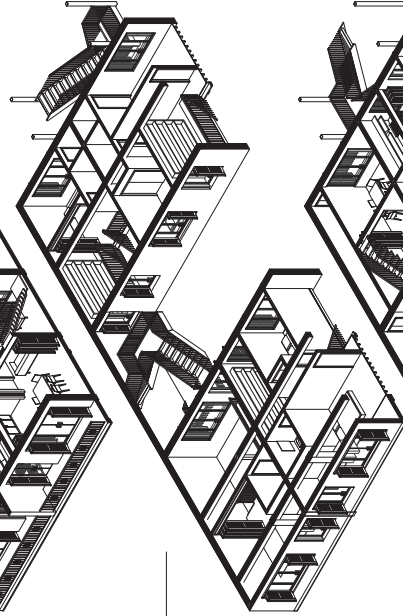


ENTRESUELO

175 M²
APT. C | D | F | G
PRODUCTIVE SPACE
PRIVATE SPACE
RENTABLE SPACE
PERSIANAS | LOUVERS
MAMPARAS | PARAVENT
TIMBER FRAMING

PLANTA ALTA

280 M²
APT. C | D | F | G
PRODUCTIVE SPACE
PRIVATE SPACE
RENTABLE SPACE
PERSIANAS | LOUVERS
MAMPARAS | PARAVENT
BALCON | BALCONY

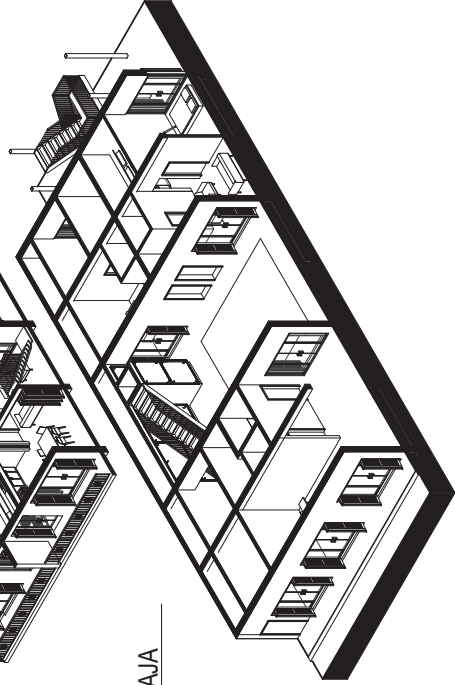


BARBACOA

160 M²
APT. B | D | E | G
PRODUCTIVE SPACE
PRIVATE SPACE
RENTABLE SPACE
PUNTAJ | HIGH CEILINGS
PERSIANAS | LOUVERS
WOOD FLOOR ON
TIMBER FRAMING

PLANTA PRIMERA

280 M²
APT. B | D | E | G
PRODUCTIVE SPACE
PRIVATE SPACE
RENTABLE SPACE
PUNTAJ | HIGH CEILINGS
PERSIANAS | LOUVERS
MAMPARAS | PARAVENT
BALCON | BALCONY

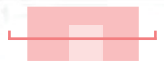


PLANTA BAJA

300 M²
APT. A - 2 UNITS
GALLERY
ZAGUAN | VESTIBULE
PASILLO | CORRIDOR
PATIO | COURTYARD
COMMERCIAL SPACE
PRIVATE SPACE
SHARED SPACE

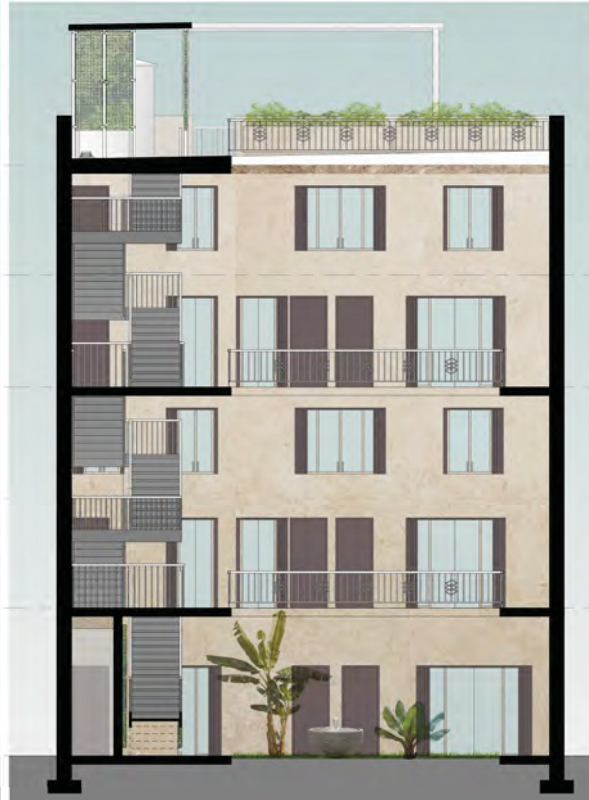


SECTION A





SECTION B

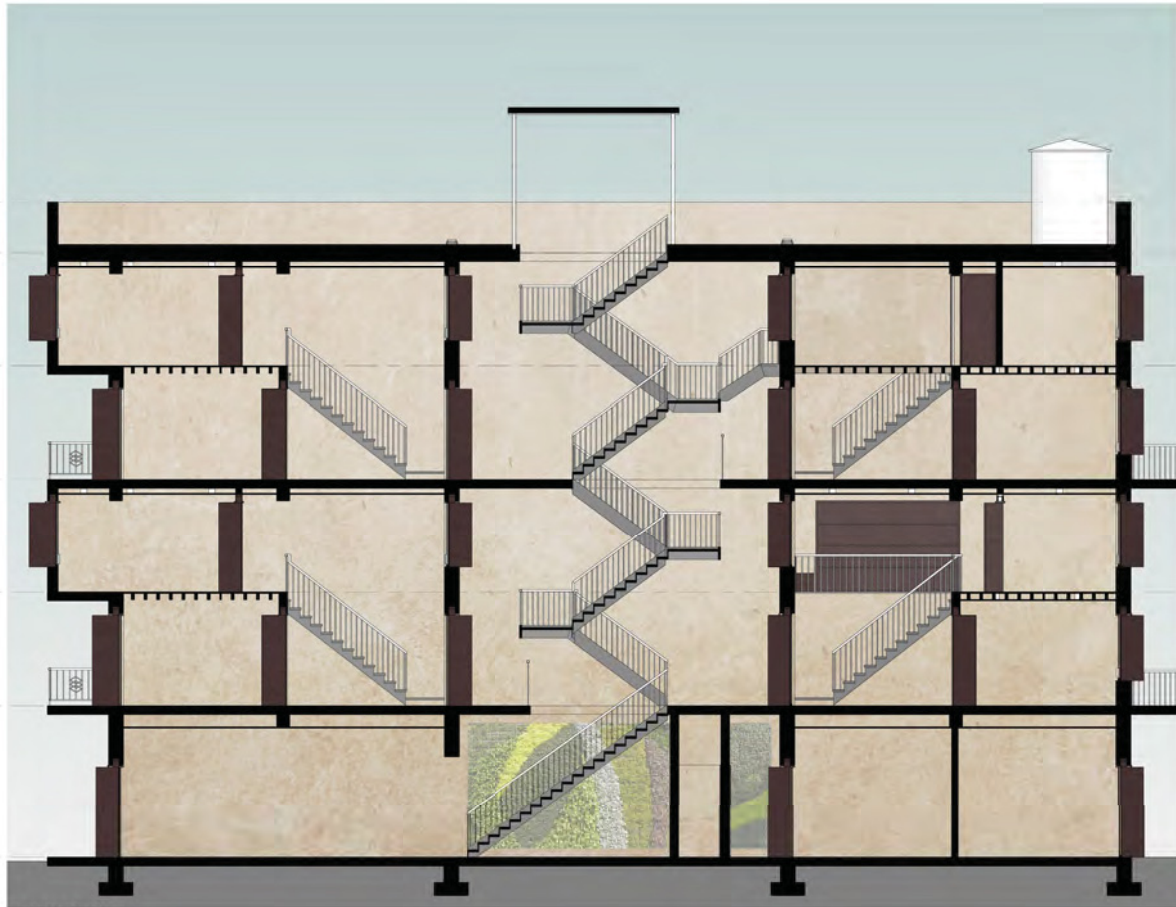


SECTION C

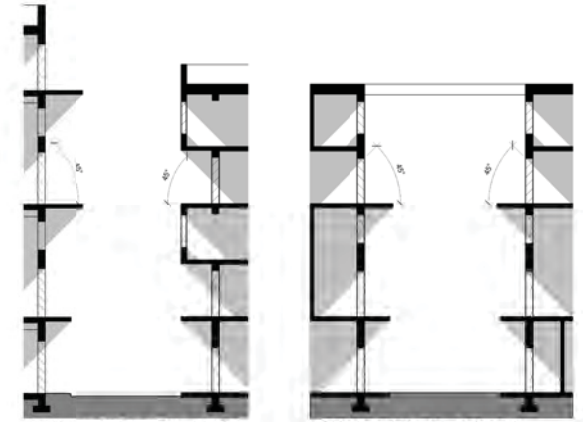


SECTION D



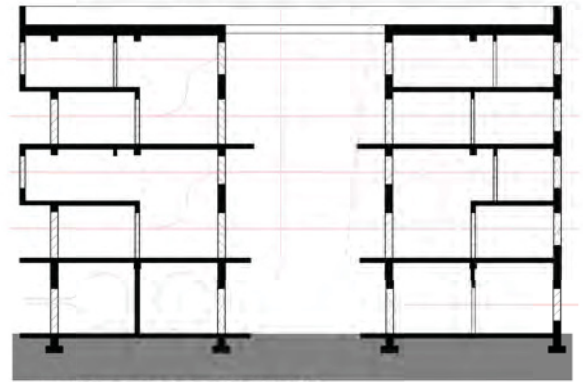


SECTION E



CALLE CUBA STUDY

COURTYARD STUDY



CROSS VENTILATION STUDY







Courtyard from Above

Entry





Dining and Kitchen





Bedroom

“After the revolution, in accordance with the policy of “densening up” the bourgeoisie, the enfilade was cut up into pieces, with one family per room. Walls were erected between the rooms - at first of plywood. Subsequently, over the years, boards, brick, and stucco would promote these partitions to the status of architectural norm. If there is an infinite aspect to space, it is not its expansion but its reduction. If only because the reduction of space, oddly enough, is always more coherent.”

- Joseph Brodsky, *In a Room and a Half*

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