

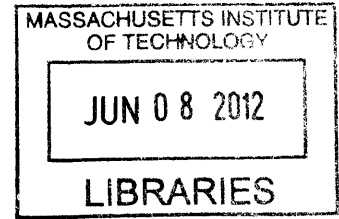
Densifying the Suburbs: A Single-Family Home Alternative for Tropical Living in Coral Gables, Florida

by

Maria Antonia Botero

BArch

University of Miami, 2009



ARCHIVES

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN ARCHITECTURE STUDIES
AT
THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 2012

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Submitted to the Department of Architecture on May 24th, 2012 in Partial Fulfillment of the Requirements for the Degree of the Master of Science in Architecture Studies

ABSTRACT

This design project was an experimental case study to establish a viable, reduced-size typological alternative for single-family housing as a potential vehicle for the densification of the urban suburbs. Through demographic and census data, the need for this kind of densification was first established and then a design project was formulated using site-specific parameters and industry projections on the future of housing needs.

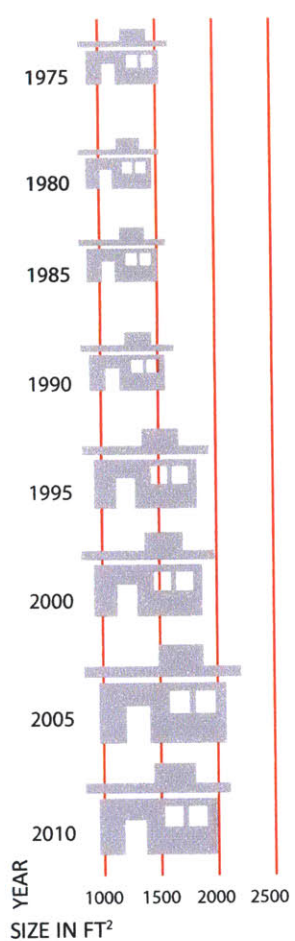
The project began with a study of different housing typologies that variably affected urban form. Then, the project focus narrowed to a complete design proposal for the selected site where specific typological ideas and their resulting urban form were tested.

Thesis Supervisor: Nader Tehrani

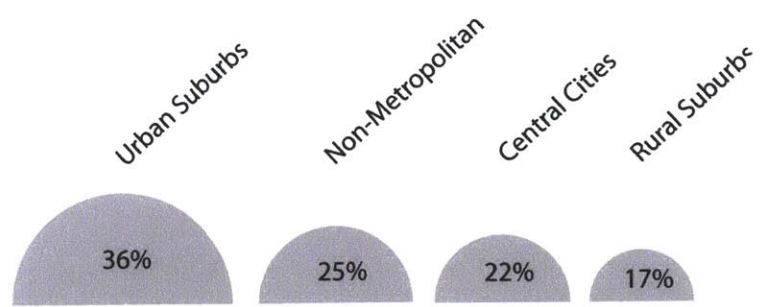
Title: Professor of Architecture & Department Head

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Housing size chart showing size reduction in 2009



Distribution of Owner-Occupied Housing Units Across Metropolitan Statistical Area Locations

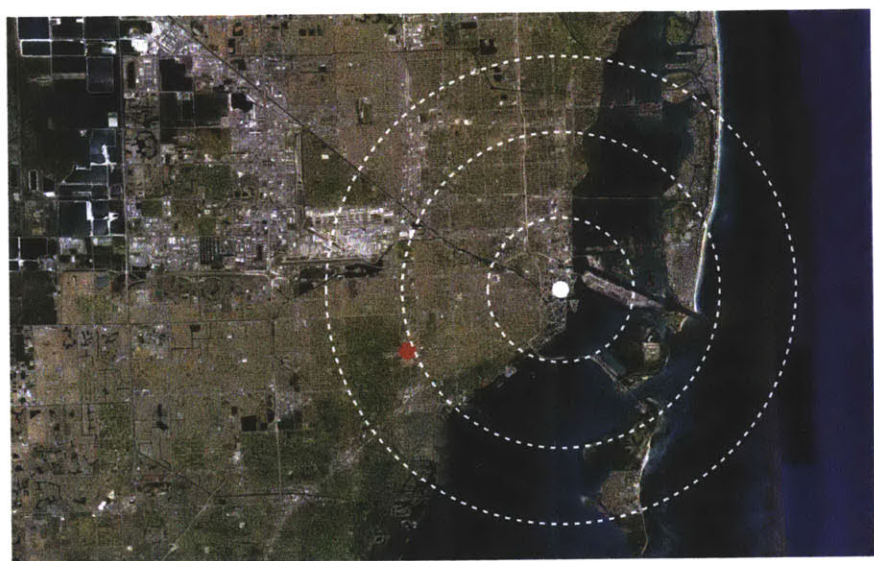


Illustration of the urban suburbs of the Metropolitan Miami area (in red) in relationship to the city center (in white).

INTRODUCTION

The majority of the U.S. population lives in the “urban suburbs” within metropolitan statistical areas (MSA).¹ These “urban suburbs” are the area immediately adjacent to the most dense city centers, and are mostly commonly comprised of single family homes.

In 2009, there was a major change in the trend of growing single-family home sizes and although it may be a “recession-related phenomenon,” there are other factors like the desire to keep

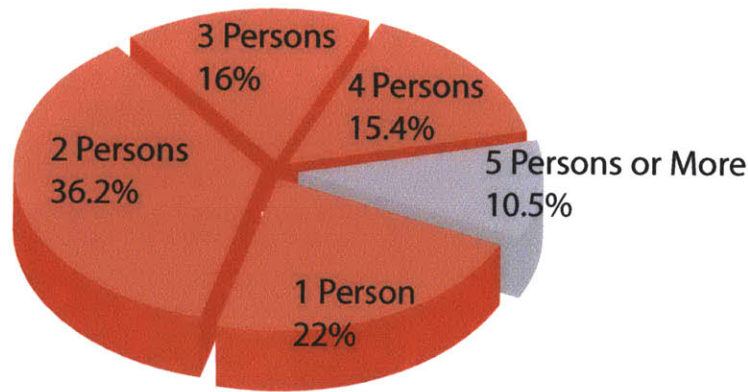
¹ Dietz and Siniavskaia, Ph.D. 2011

energy costs down, tightening credit standards and less emphasis on purchasing a home purely for investment purposes, which point to this size-reduction as a more permanent tendency.^{2,3}

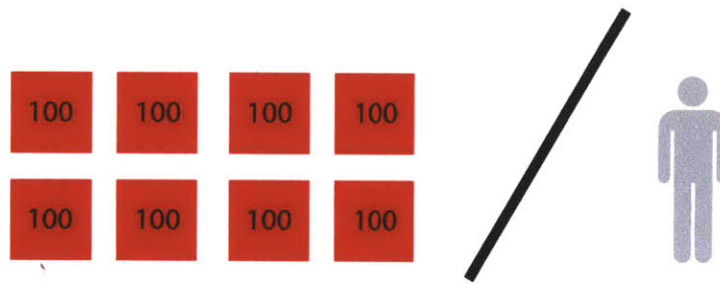
Aside from housing size trends, recent demographic changes and advances in technology have changed the way we live and have expanded the possibilities for the way we design and build our homes.

² Dietz and Siniavskaia, Ph.D. 2011

³ Emrath, Ph.D and Siniavskaia, Ph.D. 2009



Distribution of Home Owners by Household Size Within Urban Suburbs



National Average of Square Feet per Person for Single-Family Homes

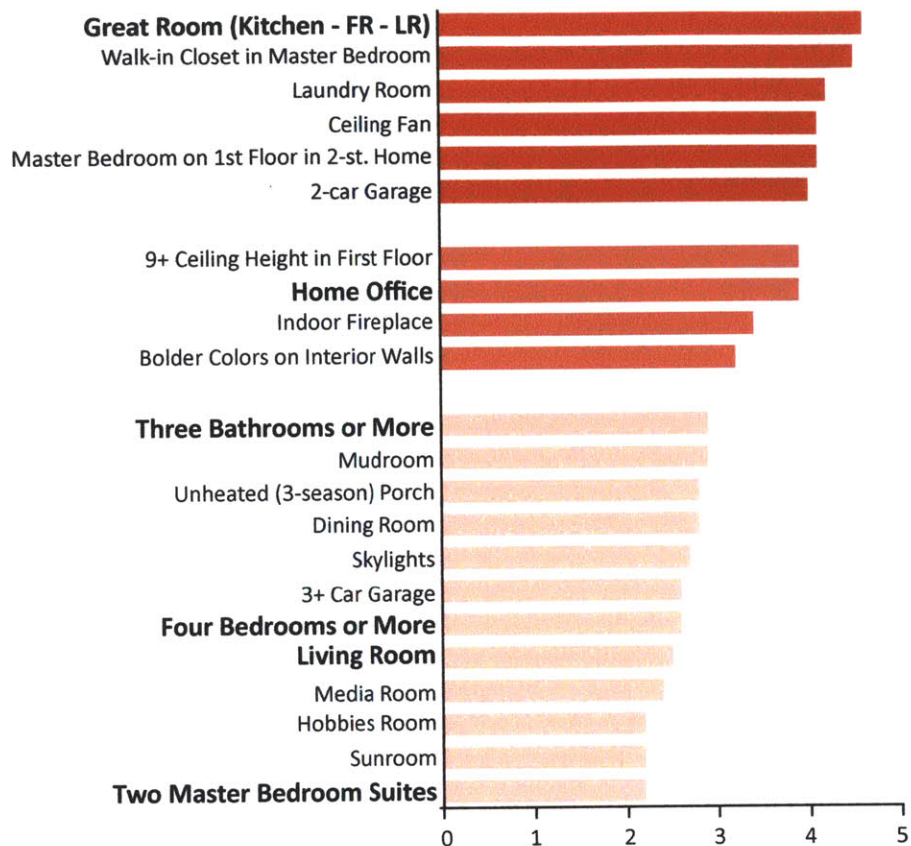
According to the 2010 census, most people no longer live in nuclear families. About 90% of single-family households are comprised of four or less people and more than half of those households are only made up of one or two people, suggesting that most people are either living alone with a partner or spouse or are single parents.⁴ This means that the greatest need in the future of housing is mostly for one or two-person households and reduced yet still significant for three and at most four-person homes.

⁴ Dietz and Siniavskaia, Ph.D. 2011

Despite that families have become less numerous and that people need less living space, housing sizes have not decreased *enough* to reflect these changes. In MSAs, not including the city centers, the average amount of space per person is currently 800ft².⁵

According to a 2010 survey on housing trends and sizes, builders, architects and manufacturers indicated that they expect the average, single-family home of the near future to be smaller. The survey results provide detailed information regarding housing design trends that reflect

⁵ Dietz and Siniavskaia, Ph.D. 2011



Rooms/Features likely to be included in Average, New Single-Family Detached Home in 2015 (1 = Not at all likely, 5 = Very likely)
 Survey results from "The New Home in 2015" survey qtd. in Quint, 2011.
 Highlighted in the chart are the most significant changes in trend that affect the total size of the home.

some of the economic and demographic conditions we currently live in, like the reduced need for room like the living room and the dining room and an overall reduction in size and number of bedrooms.⁶ Since the survey is limited to pointing out the need for certain living spaces it provides an objective starting point for the redesign of a more appropriate dwelling by enumerating expected housing requirements according to housing trends.

Although the data available can help identify the average number of people per household and the spaces they require to live according to current conditions, none of these studies focus on the actual design of these required living spaces in light of the way in which we actually live. The aim of this project is to propose a new urban typology for city growth, based on new living space design and in tune with the suggested herewith.

⁶ Quint 2011

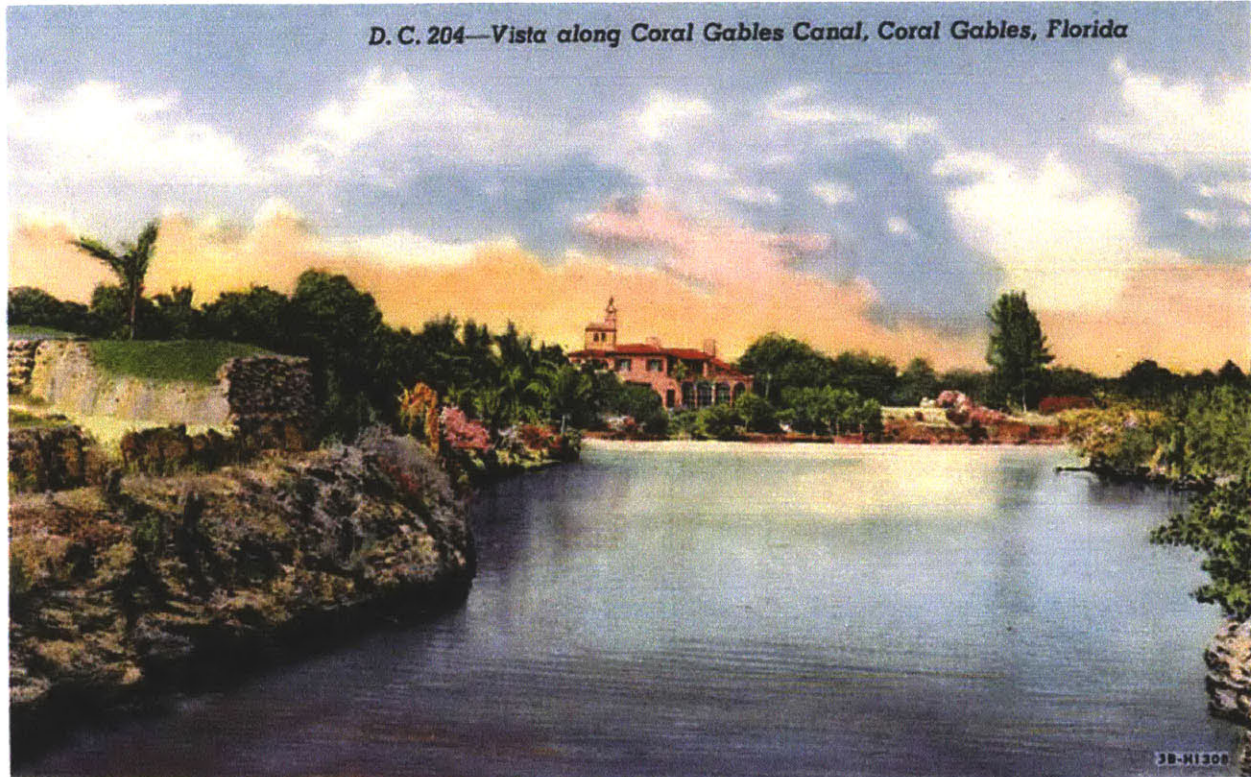
SOURCES

Dietz, Robert, and Natalia Siniavskaia, Ph.D. "The Geography of Home Size and Occupancy." *Housing Economics*. December 1, 2011. www.housingeconomics.com (accessed January 5, 2012).

Emrath, Ph.D., Paul, and Natalia Siniavskaia, Ph.D. "Household type, Housing Choice and Commuting Behavior." *Housing Economics*. December 7, 2009. www.housingeconomics.com (accessed January 5, 2012).

Quint, Rose. "Special Study for Housing Economics." *Housing Economics*. March 2011. www.housingeconomics.com (accessed January 5, 2012).

EXISTING CONDITIONS

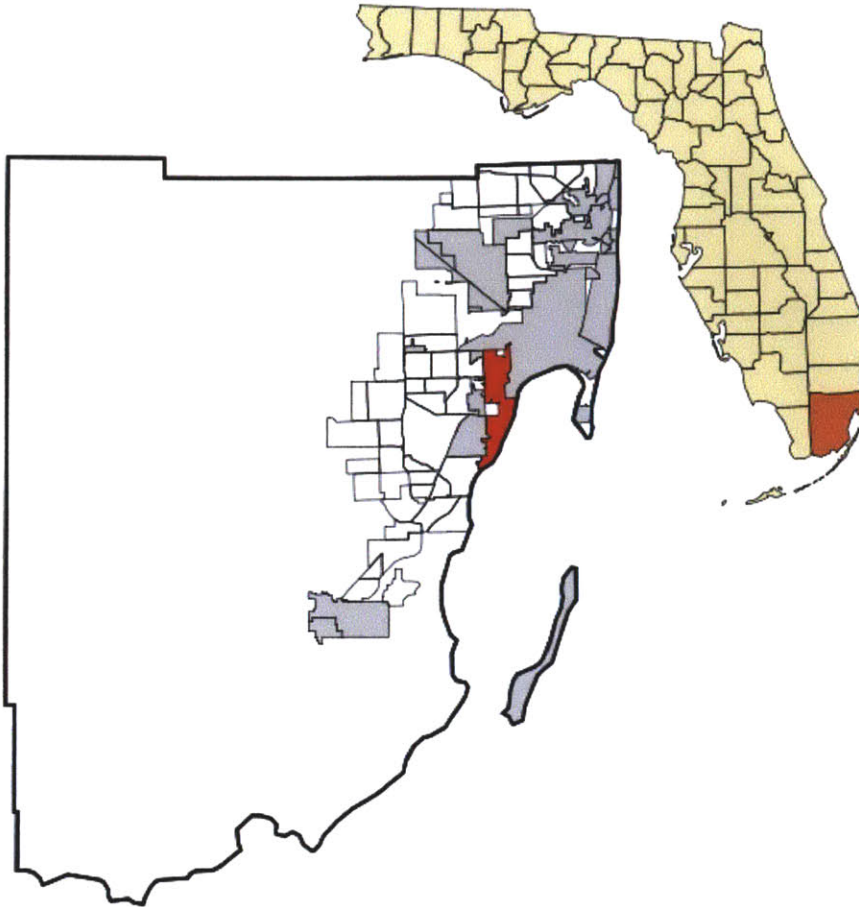


Illustrated historical postcard showing one of the winding canals through Coral Gables
Image source: University of Miami Florida Postcard Collection©

Demographics

Coral Gables is a city of 46,780 people, the majority (53%) of whom consider themselves white (40%) or white Hispanic (53%). Only 17.9% of people are under 18 years of age and 15.6% are over 65. This means that the majority of the people in Coral Gables are young professionals or starting families (University of Miami students are not counted as residents.) Since 2000, the city's population has grown 10.7%, in line with the Metropolitan Miami population growth of 10.2%. Despite

this growth, Coral Gables' historical areas have remained untouched. The majority of the physical growth has taken place near the commercial downtown area and in the areas zoned for residential, high-density multi-family residential use. The per capita (\$53,264) and median (\$84,027) income are both twice that of Florida (\$26,551 and \$47,661 respectively) and the University of Miami is the city's biggest employer. The city's total area is 12.9 square miles and the population density is relatively



Coral Gables highlighted in Dade-County (highlighted in Florida above)
Image source: Wikimedia Commons Free License

low at 3,621 people/mi² (compared to 11,135 ppl/mi² for Miami Metro and 11,510 ppl/mi² for the city of Miami Beach.)¹

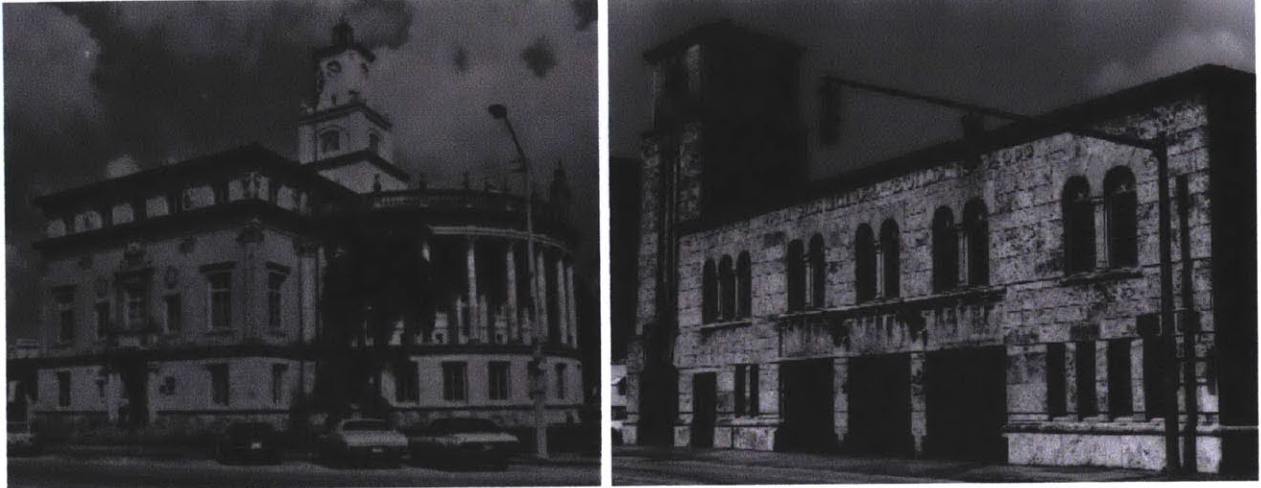
According to the U.S. Census Bureau predictions, about 70% of the population increase in the United States is attributed to immigration, with the national percentage of foreign-born residents quickly approaching 13%.² In Coral Gables, 30.6% of the population is foreign-born, which is considerably lower

¹ Census 2012

² Capps, et al. 2005

than that of metropolitan Miami (58%) but still more than twice the national average.³ These figures speak to Miami's standing as a main arrival point for Latin American immigrants, due in part to its proximity to Central and South America. Despite these figures and the fact that there are numerous local communities that identify with specific immigrant groups, there are very few areas close to the city center that cater specifically to newly-arrived and local young professionals and families.

³ Census 2012



Historical photographs of Coral Gables city Hall (left) and the fire station (right)
Image source: Florida Department of State Division of Historical Resources ©

Geography and History

Coral Gables was first established by George Merrick during Miami's 1920's land boom after he expanded his father's 160-acre plantation to around 3,000 acres and formulated a development project for the area at an unprecedented scale. Merrick's ambition was mostly fueled by Miami's tropical climate and extensive shoreline, which he believed were the most appropriate backdrop for the development of city that spoke of the area's rich Spanish heritage.⁴

⁴ Steig (n.d.)

The original inspiration for the city was Frederick Law Olmstead's work for Central Park following the "City Beautiful Movement," which promoted the use of tree-lined avenues, winding roadways, green open spaces and ornate plazas and in the case of Coral Gables, the architecture was entirely formulated to follow the Mediterranean Revival style. These basic design stipulations set the stage for a notoriously strict building and zoning code for the city, which has yielded a mostly lushly-planted, suburban neighborhood.⁵

⁵ Steig (n.d.)



Typical tree-lined street of Coral Gables
Image source: "A Tale of Two Villages" blog by Manuel Delgadillo©

Modern-day Coral Gables is surrounded by major urban arteries that make up an essential part of the metropolitan Miami street grid. These major streets clearly demarcate the city bounds of Coral Gables and provide direct connections from the city to other significant urban centers within the metropolitan Miami area, as well as direct access to the highways. Coral Gables is bordered on the West by 57th Avenue (Red Road) north of 72nd Street (Sunset Drive); on the West by 49th Avenue and Old Cutler Road; on the North by SW 8th Street (Calle Ocho or Tamiami Trail); on the East by 37th Avenue (Douglas Road) north of 26th Street; and on the South by the Charles Deering Estate. The city is located within a 15-minute drive of Miami's downtown and financial district and about a 10-minute drive from the airport; beach access either to South Beach or Key Biscayne is within a 25-minute drive. Despite that there are several bus stops on the main arteries that border Coral Gables and that the metro-rail runs along U.S. route 1, the frequency of trips and stops of both the buses and the train is not significant to make public transportation easily available.

sources

Bureau, U.S. Census. Coral Gables (city) QuickFacts from the US Census Bureau. January 23, 2012. <http://quickfacts.census.gov> (accessed February 28, 2012).

Capps, Randy, Michael Fix, Julie Murray, Jason Ost, Jeffrey S. Passel, and Shinta Shinta Herwantoro. "The New Demography of America's Schools: Immigration and the No Child Left Behind Act."

Quint, Rose. "Special Study for Housing Economics." Housing Economics. March 2011. www.housingeconomics.com (accessed January 5, 2012).

Steig, Stacy. "A History of Coral Gables: A look into the past." Metro Magazine, n.d.



1. SEGOVIA AND MALAGA

Total Area: 146,971 ft²
 Total Square footage: 42,140 ft²
 FAR: 0.28
 Coverage: 35,968 ft² (24.4%)
 Empty Area: 111,003ft² (75.6%)
 Estimated Number of Residents (one person / 800 ft²): 52.6

2. MIXED BLOCK NEAR ALHAMBRA

Total Area: 172,178 ft²
 Total Square footage: 75,122 ft²
 FAR: 0.43
 Coverage: 48,748 ft² (28.3%)
 Empty Area: 123,430 ft² (71.7%)
 Estimated Number of Residents (one person / 800 ft²): 93.9

3. 21st and 27th

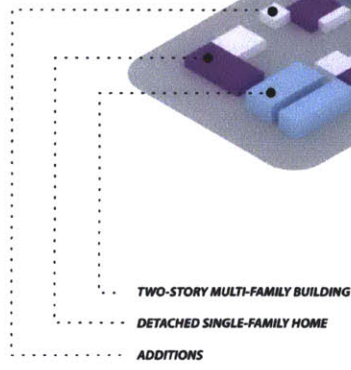
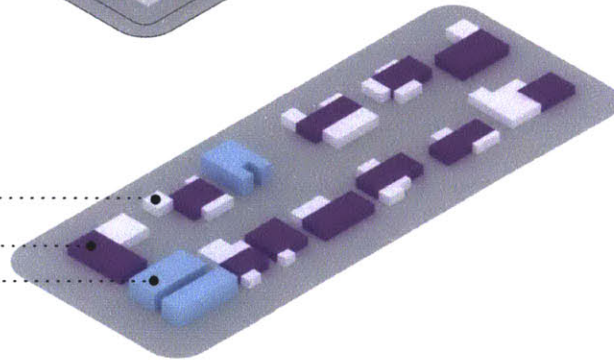
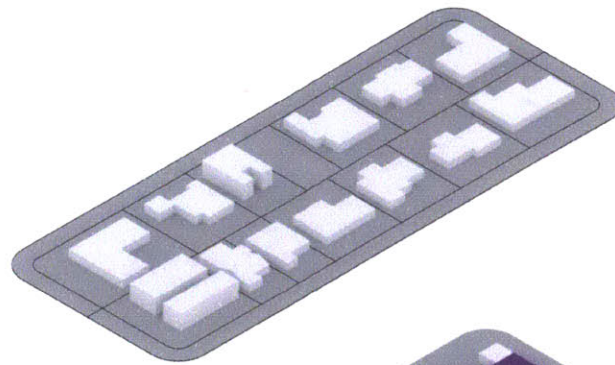
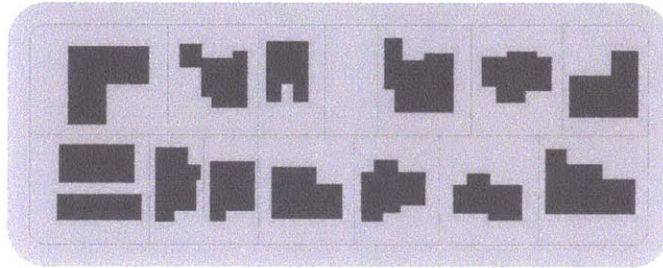
Total Area: 175,635 ft²
 Total Square footage: 67,270 ft²
 FAR: 0.38
 Coverage: 53,492 ft² (30.4%)
 Empty Area: 122,143 ft² (69.6%)
 Estimated Number of Residents (one person / 800 ft²): 84

4. MALAGA AND LEJEUNE

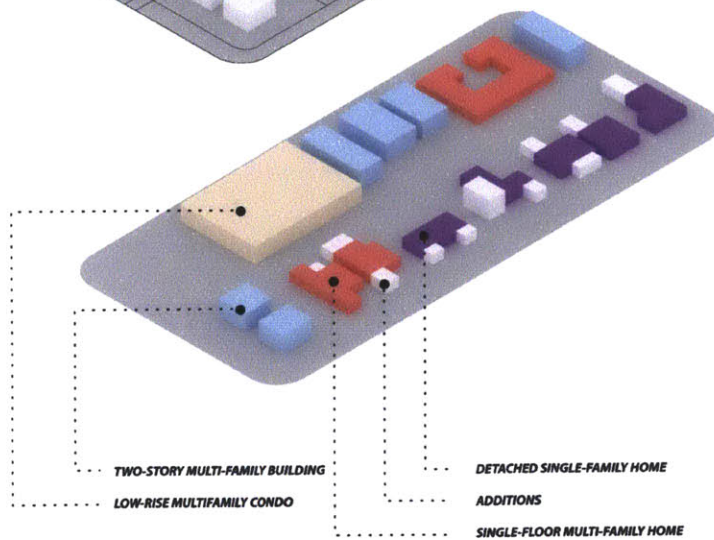
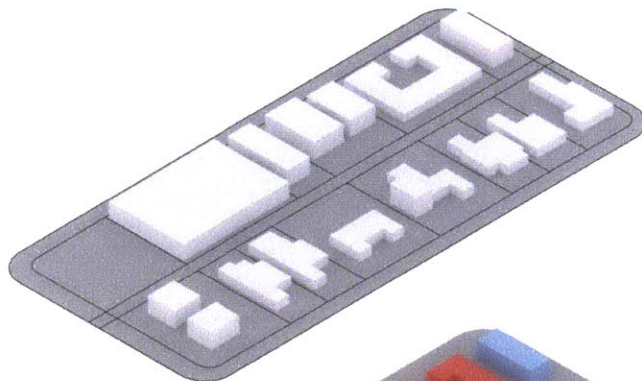
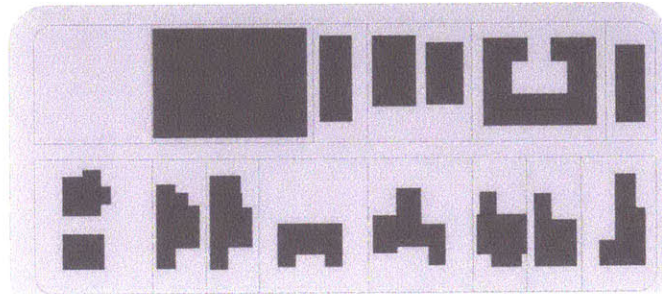
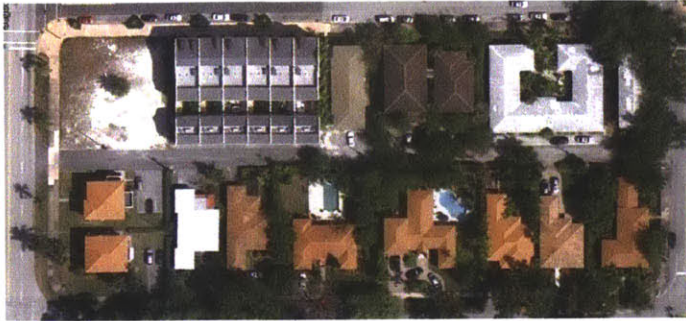
Total Area: 147,816 ft²
 Total Square footage: 80,838 ft²
 FAR: 0.54
 Coverage: 42,161 ft² (28.5%)
 Empty Area: 105,655 ft² (71.5%)
 Estimated Number of Residents (one person / 800 ft²): 101

5. LARGE HOUSING BLOCK ON ALHAMBRA

Total Area: 173,397 ft²
 Total Square footage: 247,019 ft²
 FAR: 1.42
 Coverage: 107,034 ft² (61.7%)
 Empty Area: 66,363 ft² (38.3%)
 Estimated Number of Residents (one person / 800 ft²): 308.7

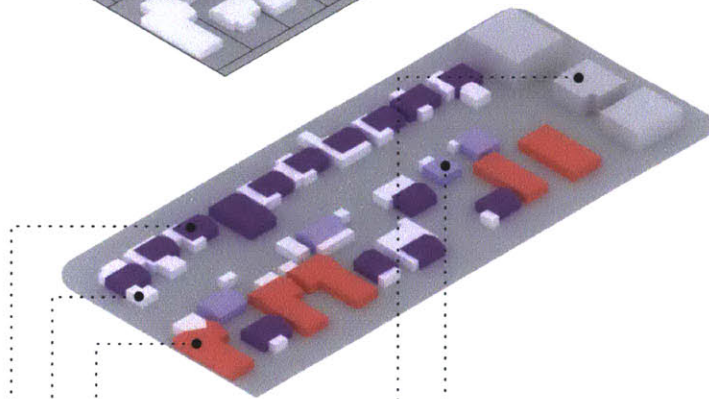
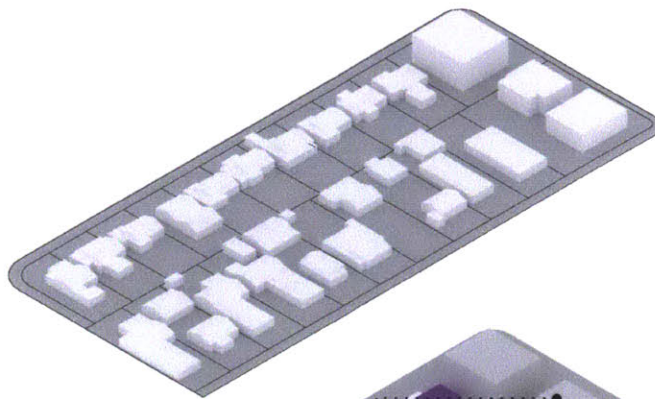
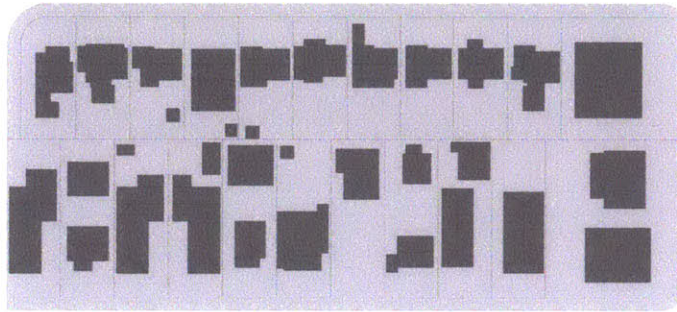


SEGOVIA AND MALAGA
 Total Area: 146,371 ft²
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 FAR: 0.28
 Coverage: 35,968 ft² (24.4%)
 Empty Area: 111,003ft² (75.6%)
 Estimated Number of Residents (one person / 800 ft²): 52.6
 Ppl./mi²: 9977



MIXED BLOCK NEAR ALHAMBRA

Total Area: 172,178 ft²
 Total Square Footage: 75,122 ft²
 FAR: 0.43
 Coverage: 48,748 ft² (28.3%)
 Empty Area: 123,430 ft² (71.7%)
 Estimated Number of Residents (one person / 800 ft²): 93.9
 Ppl./mi.²: 15,203



SINGLE-FLOOR MULTI-FAMILY HOME

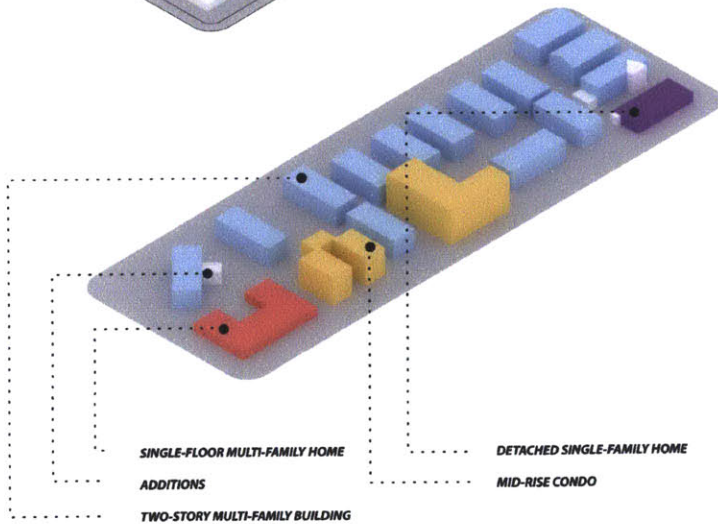
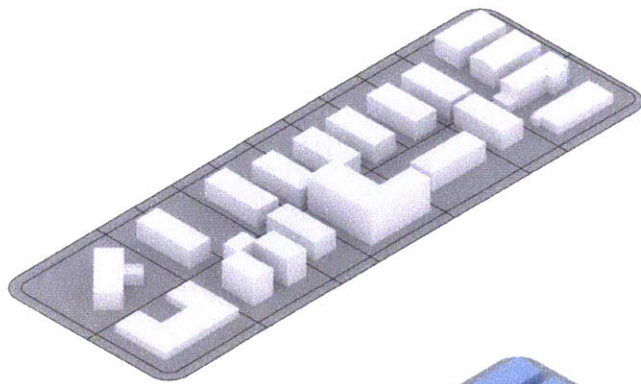
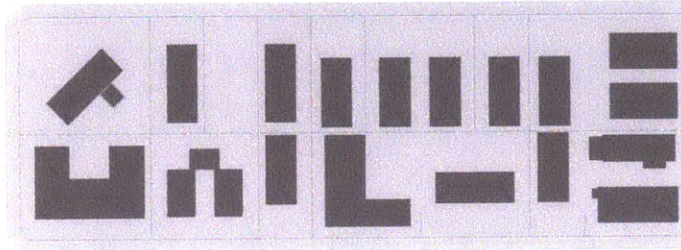
ADDITIONS

DETACHED SINGLE-FAMILY HOME

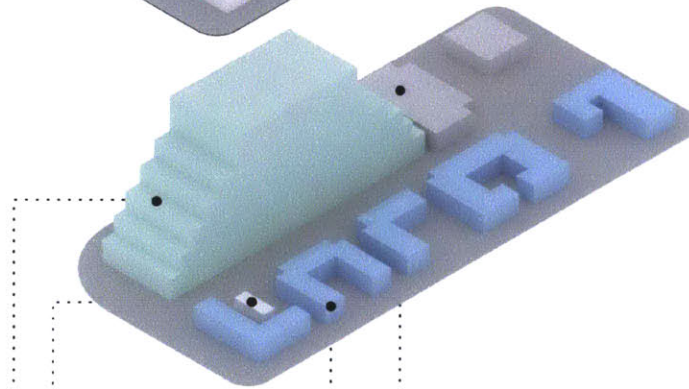
MOTHER-IN-LAW UNIT

(NON-RESIDENTIAL)

21st and 27th ONE BLOCK
 Total Area: 175,635 ft²
 Total Square Footage: 67,270 ft²
 FAR: 0.38
 Coverage: 53,492 ft² (30.4%)
 Empty Area: 122,143 ft² (69.6%)
 Estimated Number of Residents (one person / 800 ft²): 84
 Ppl./mi²: 13.333



MALAGA AND LEJEUNE
 Total Area: 147,816 ft²
 Total Square Footage: 80,838 ft²
 FAR: 0.54
 Coverage: 42,161 ft² (28.5%)
 Empty Area: 105,655 ft² (71.5%)
 Estimated Number of Residents (one person / 800 ft²): 101
 Ppl./mi.²: 19,048



ADDITIONS
MID-RISE CONDO

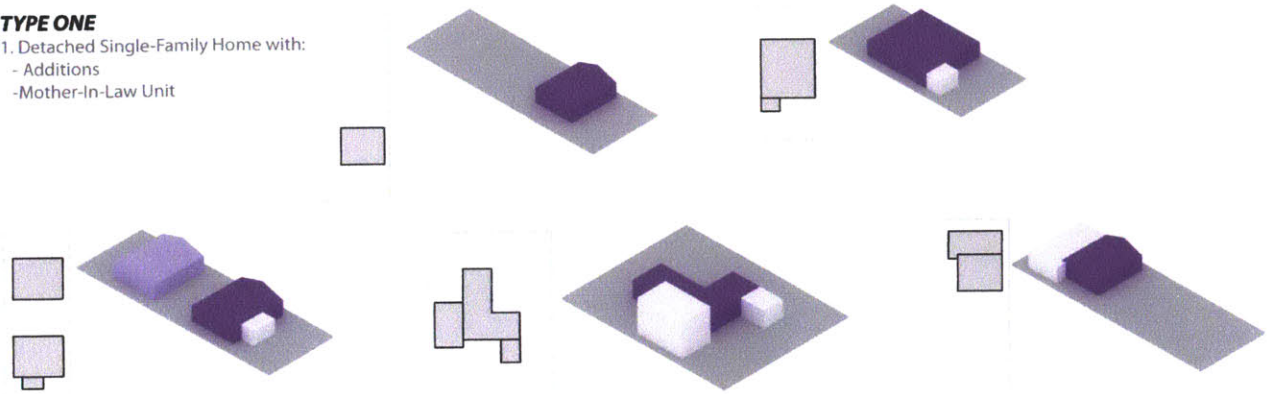
(NON-RESIDENTIAL)
TWO-STORY MULTI-FAMILY BUILDING

LARGE HOUSING BLOCK ON ALHAMBRA

Total Area: 173,397 ft²
 Total Square Footage: 247,019 ft²
 FAR: 1.42
 Coverage: 107,034 ft² (61.7%)
 Empty Area: 66,363 ft² (38.3%)
 Estimated Number of Residents (one person / 800 ft²): 308.7
 Ppl./mi.²: 49,632

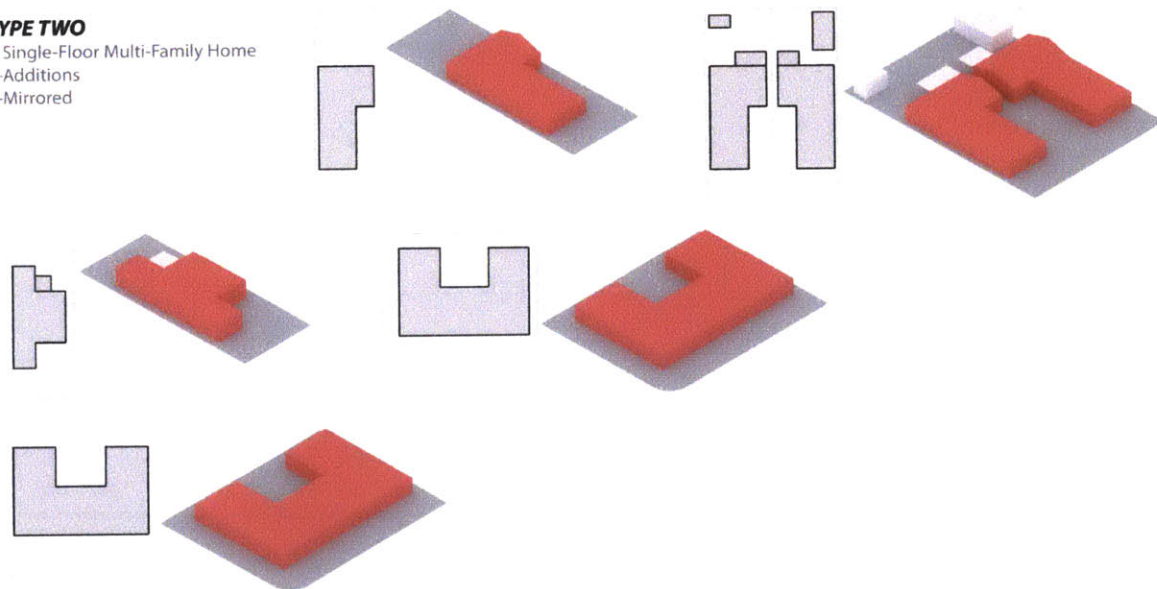
TYPE ONE

- 1. Detached Single-Family Home with:
 - Additions
 - Mother-in-Law Unit



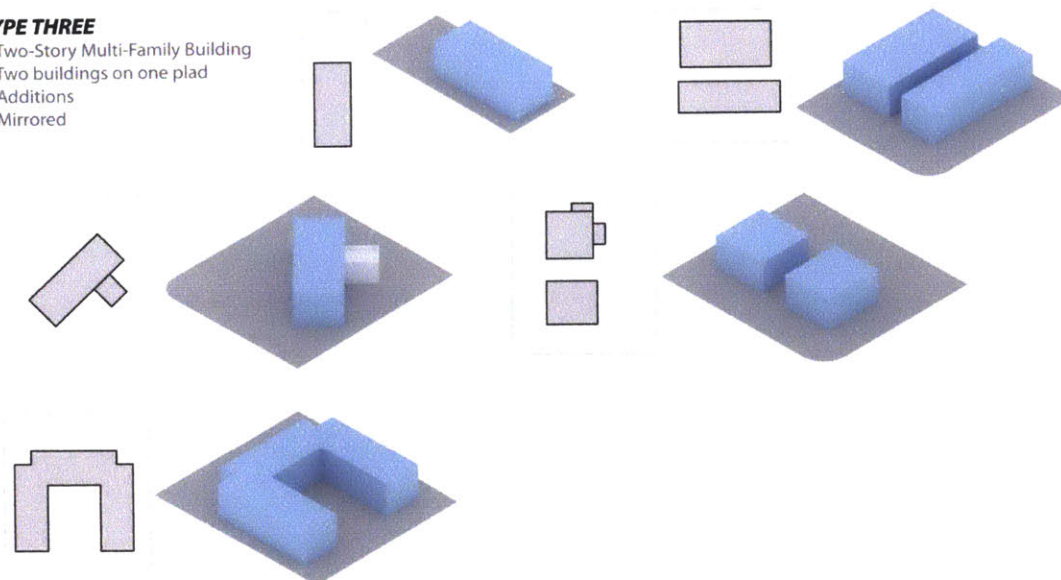
TYPE TWO

- 2. Single-Floor Multi-Family Home
 - Additions
 - Mirrored



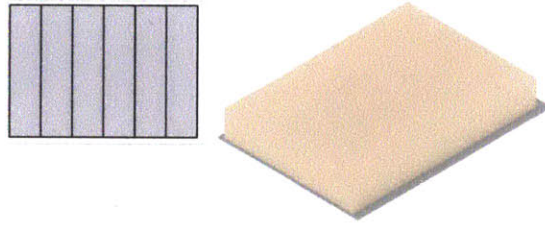
TYPE THREE

- 3. Two-Story Multi-Family Building
 - Two buildings on one plot
 - Additions
 - Mirrored



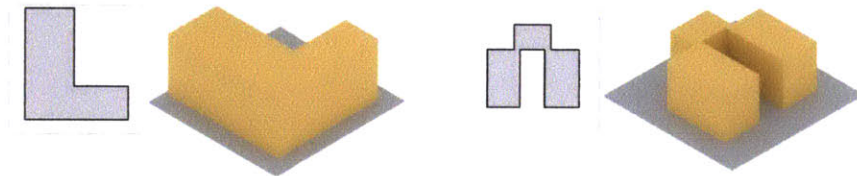
TYPE FOUR

- 4. Low-Rise Multi-Family Condo
- Multiple Owners who own one piece of land



TYPE FIVE

- 5. Mid-Rise Condo
- Mirrored
- L-shape organization



EXISTING HOUSING TYPES

- 1. Detached Single-Family Home
- 2. Single-Floor Multi-Family Home
- 3. Two-Story Multi-Family Building
- 4. Low-Rise Multi-Family Condo
- 5. Mid-Rise Condo

TYPOLOGICAL EXPLORATIONS

Botero 31

The studies collected in this publication explore typological variations applied to urban form, from small public spaces to larger morphologies. Each iteration aggregates the housing units in different combinations, while restricting size parameters. The exploration sought an aggregation method and typology that best promotes both the creation of public spaces and the possibility for neighborhood growth. While the project aims to increase density of an existing residential neighborhood, increased density alone falls short of the potential for urban design intervention in such areas.

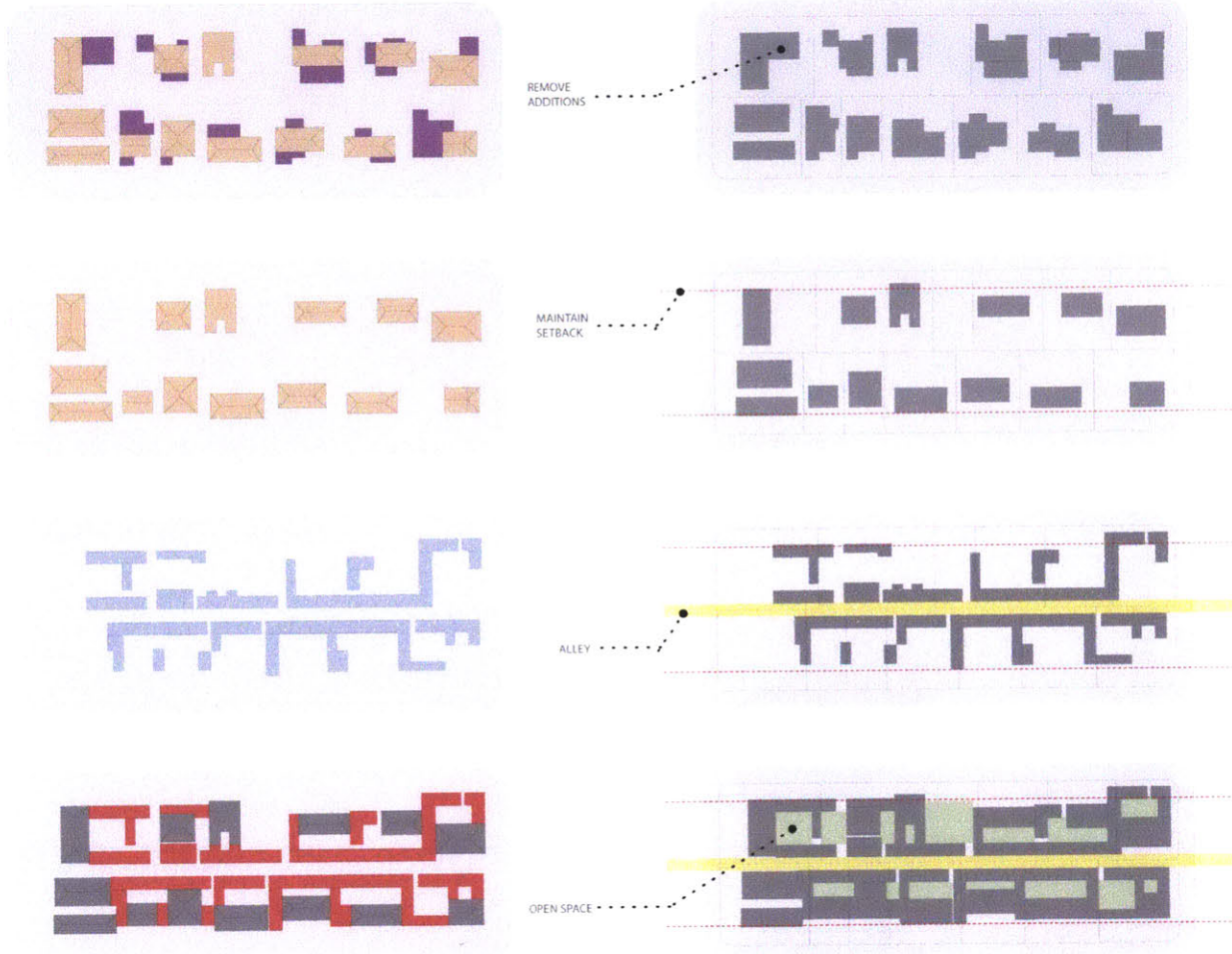
The ideal typology sought in the study will be easily aggregated from component housing units, allow for mixed uses, and respond to the South Floridian tropical climate, without exceeding a conditioned

area of 400 ft² per person. Though each possible aggregation held density as its primary motivator, each explored different approaches to achieve that density within established parameters. This exploration produced very different typological results, each of which was then examined for feasibility.

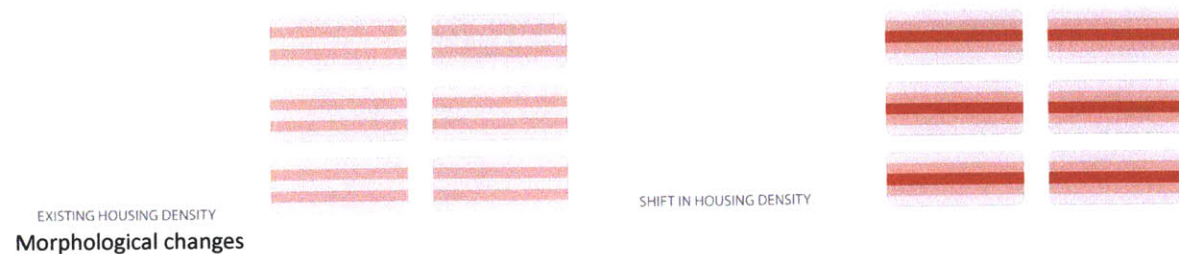
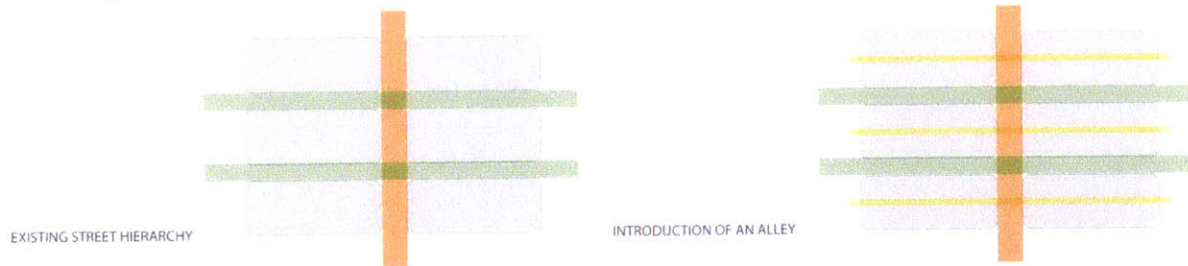
Ultimately, this study found that the most desirable typologies preserved the existing character of the neighborhood while simultaneously opening its urban fabric to possibilities for new growth. Typologies that preferenced lower building heights, smaller footprints, and designated open spaces proved most successful in acting as a joint between the existing fabric and new, denser infill housing.

INFILL METHOD USING A SINGLE-WIDE TYPOLOGY

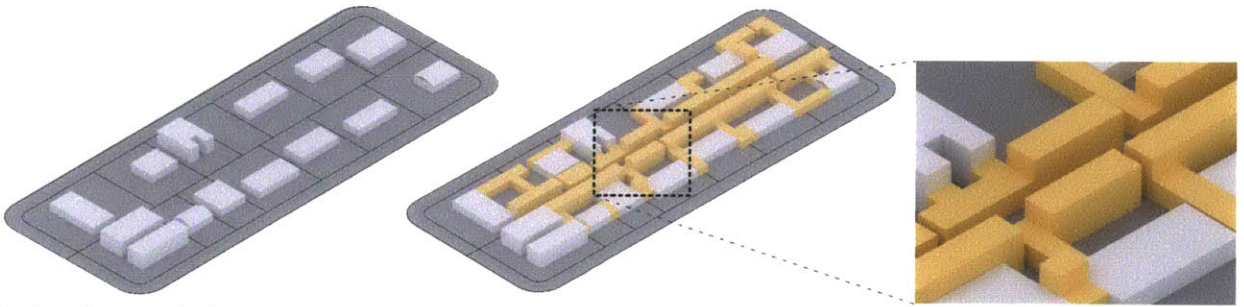
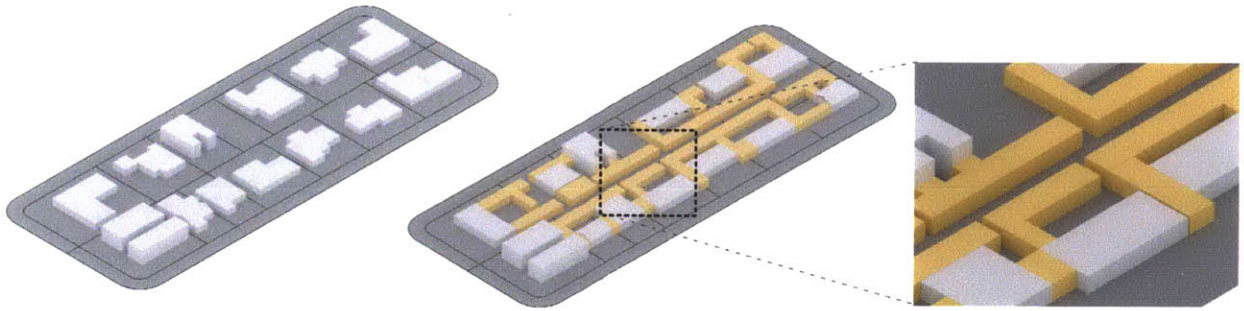
This method focuses on inserting thin building throughout the existing fabric, creating a variety of private and public open spaces. The main organization force behind this strategy was the creation of adequate open space.



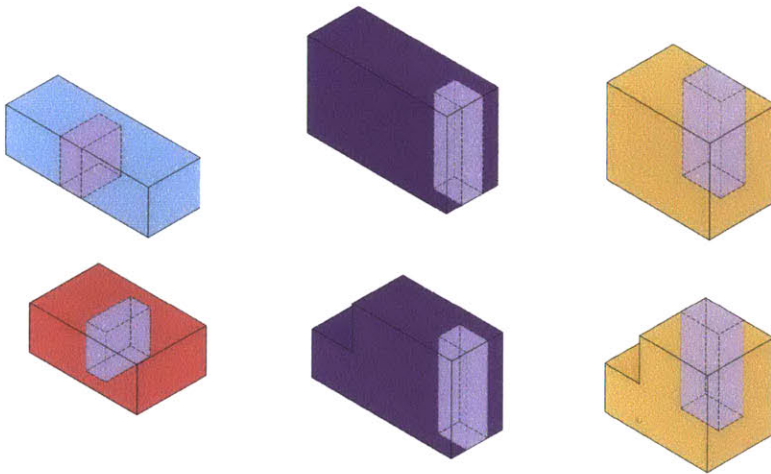
Urban strategies



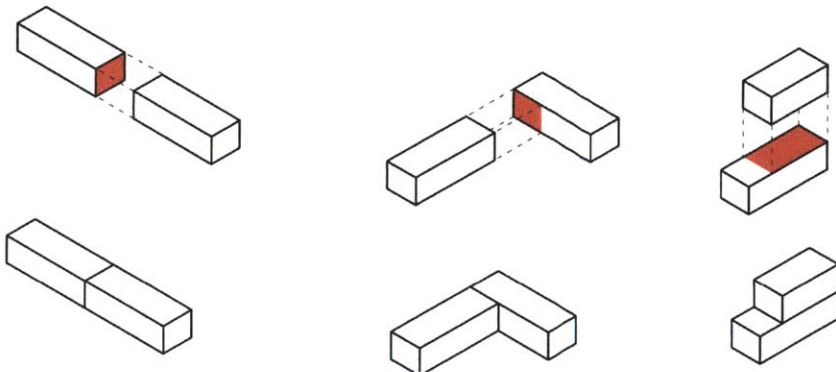
Morphological changes



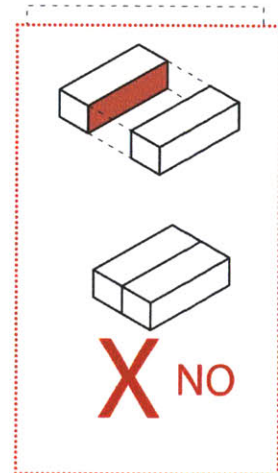
Massing diagrams of urban progression

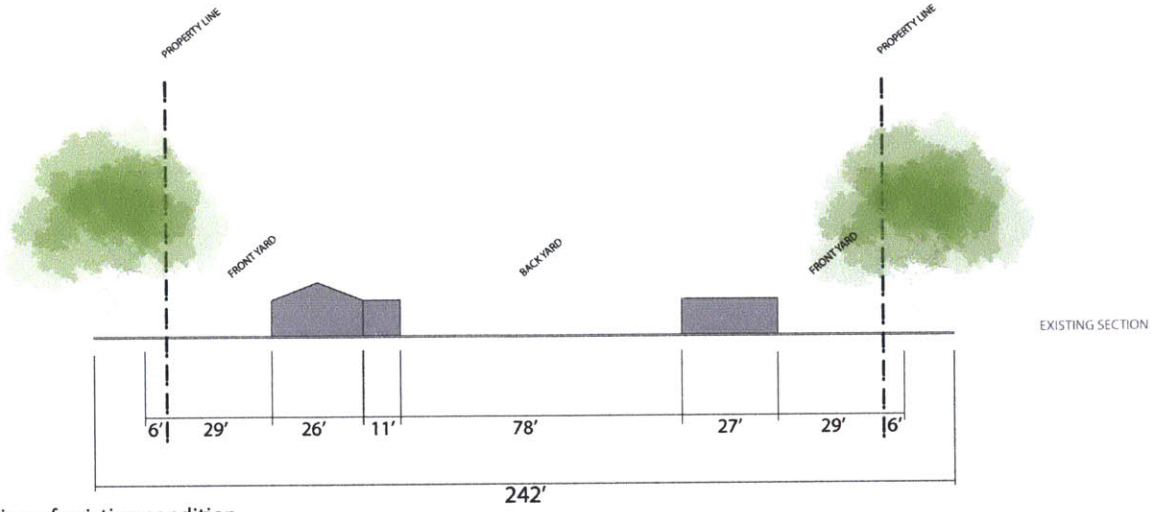


Core placement within the typology

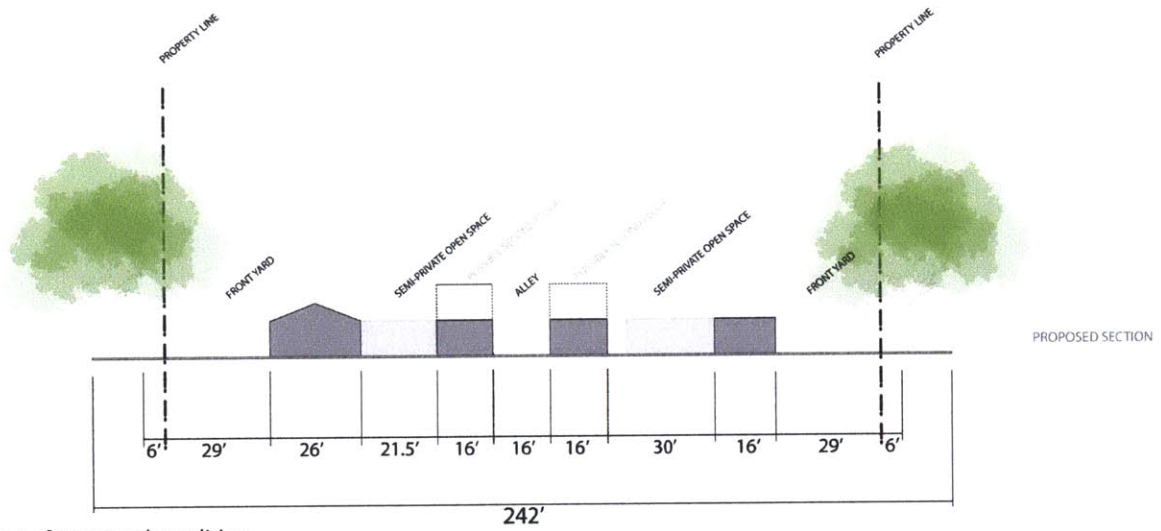


Aggregation diagram

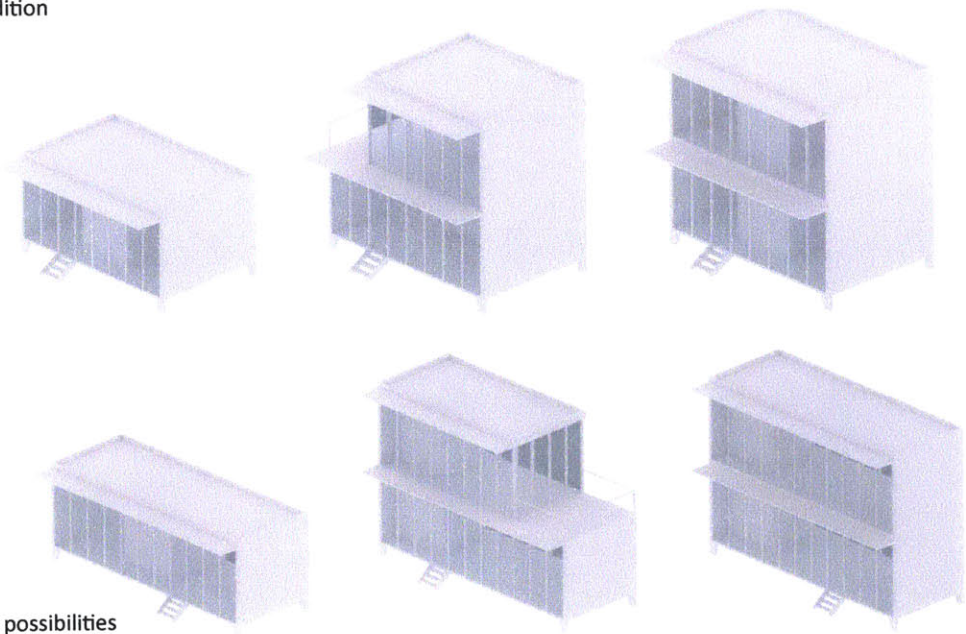




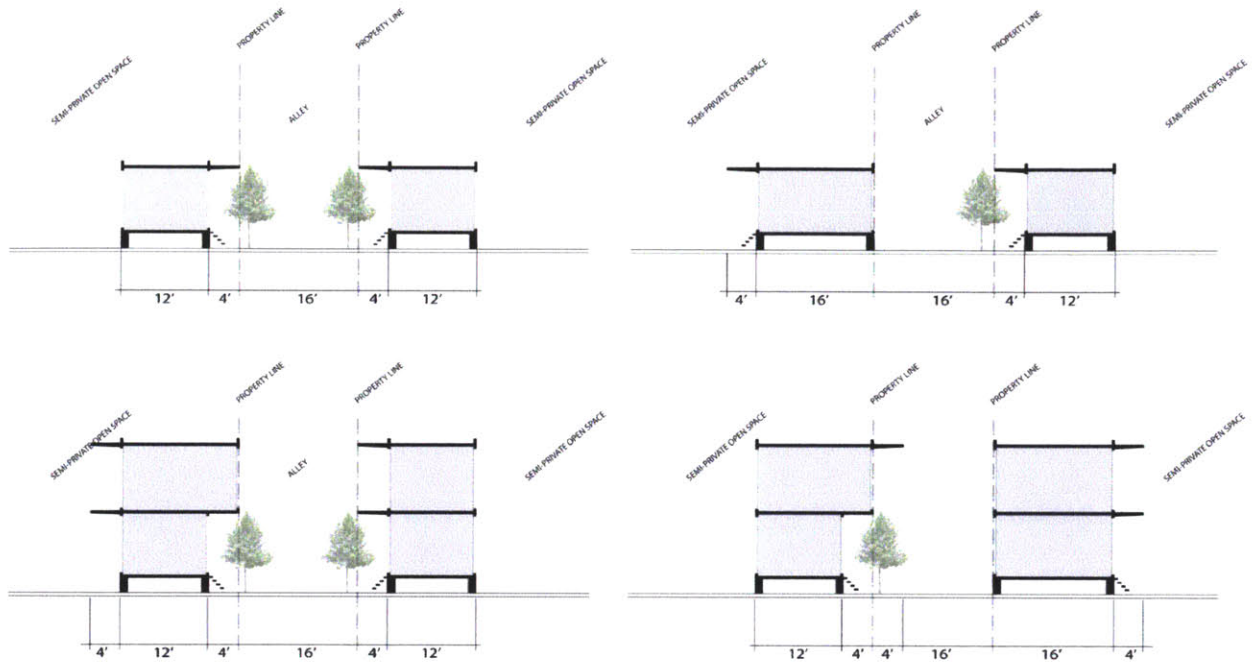
Section of existing condition



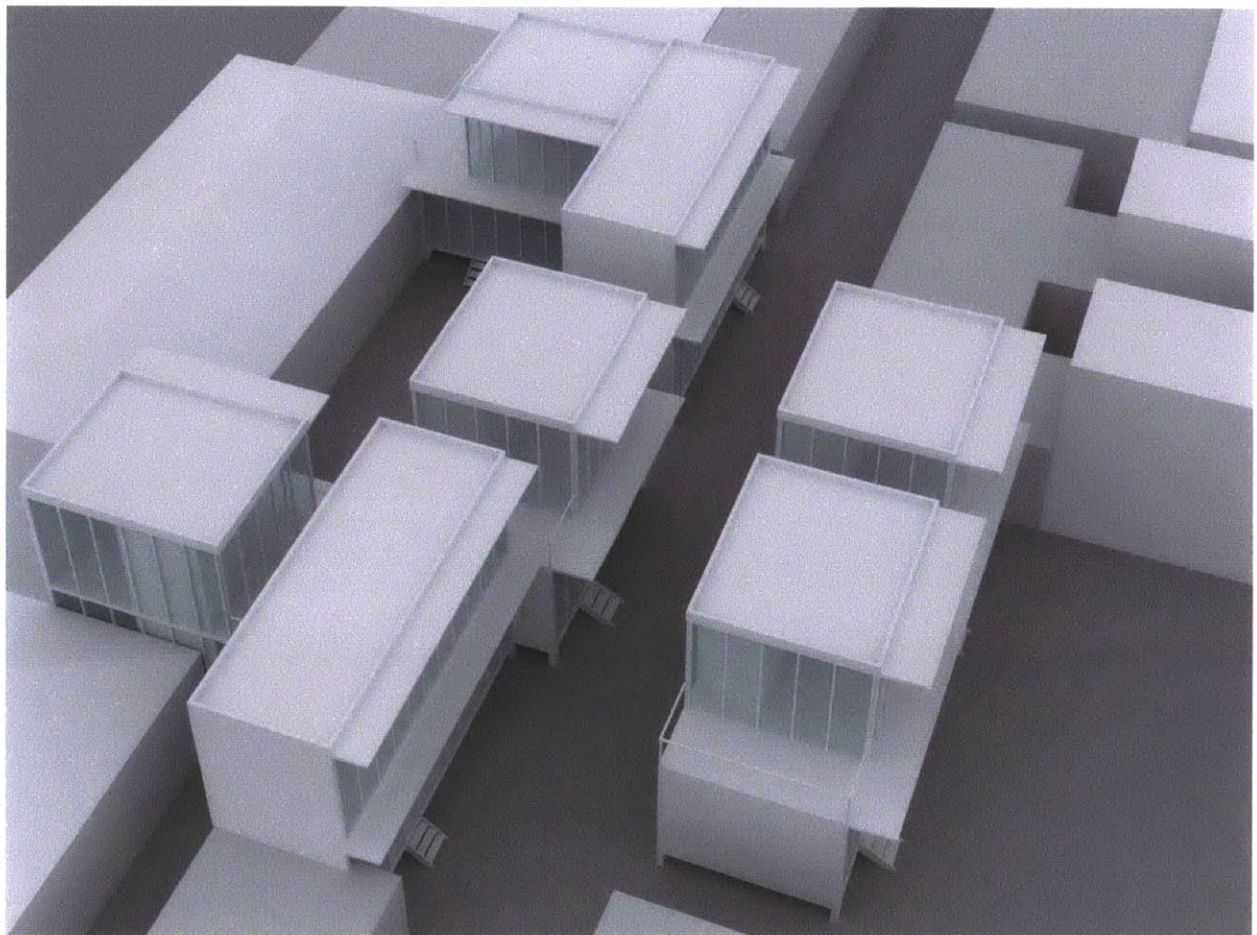
Section of proposed condition

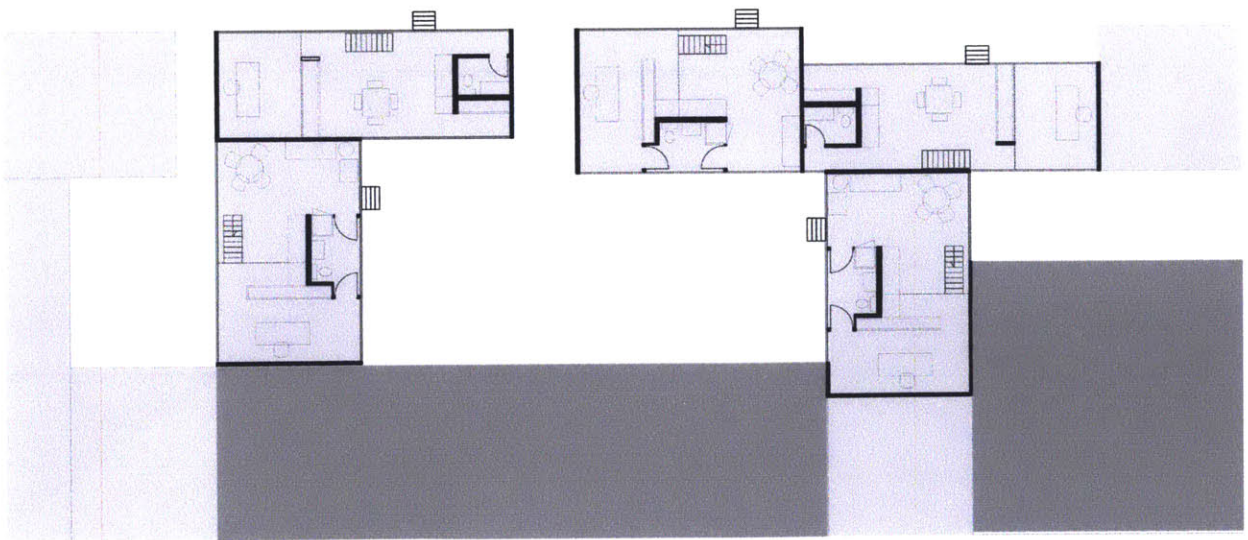
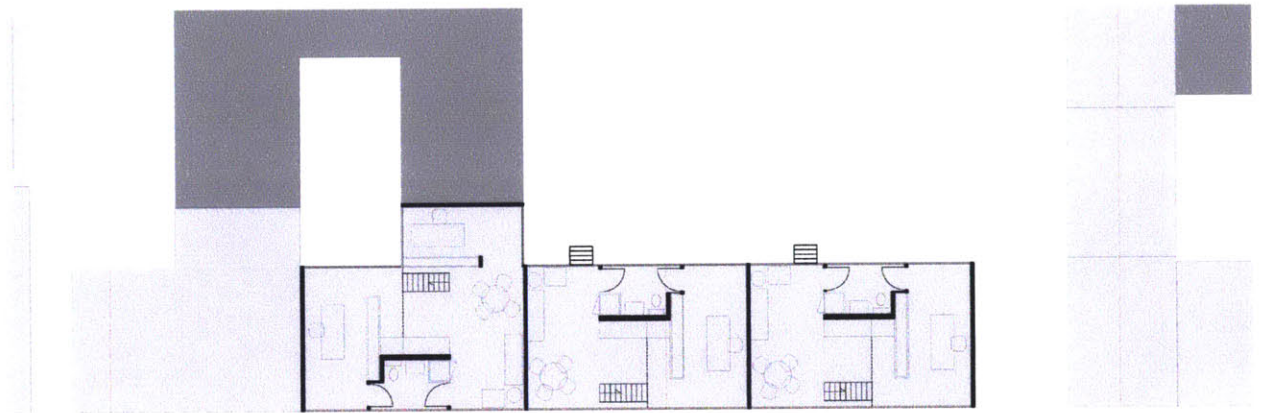
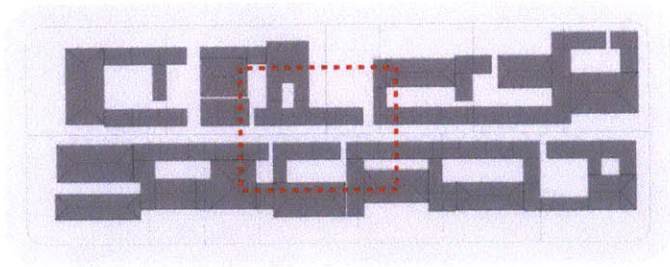


Prototypical aggregation possibilities

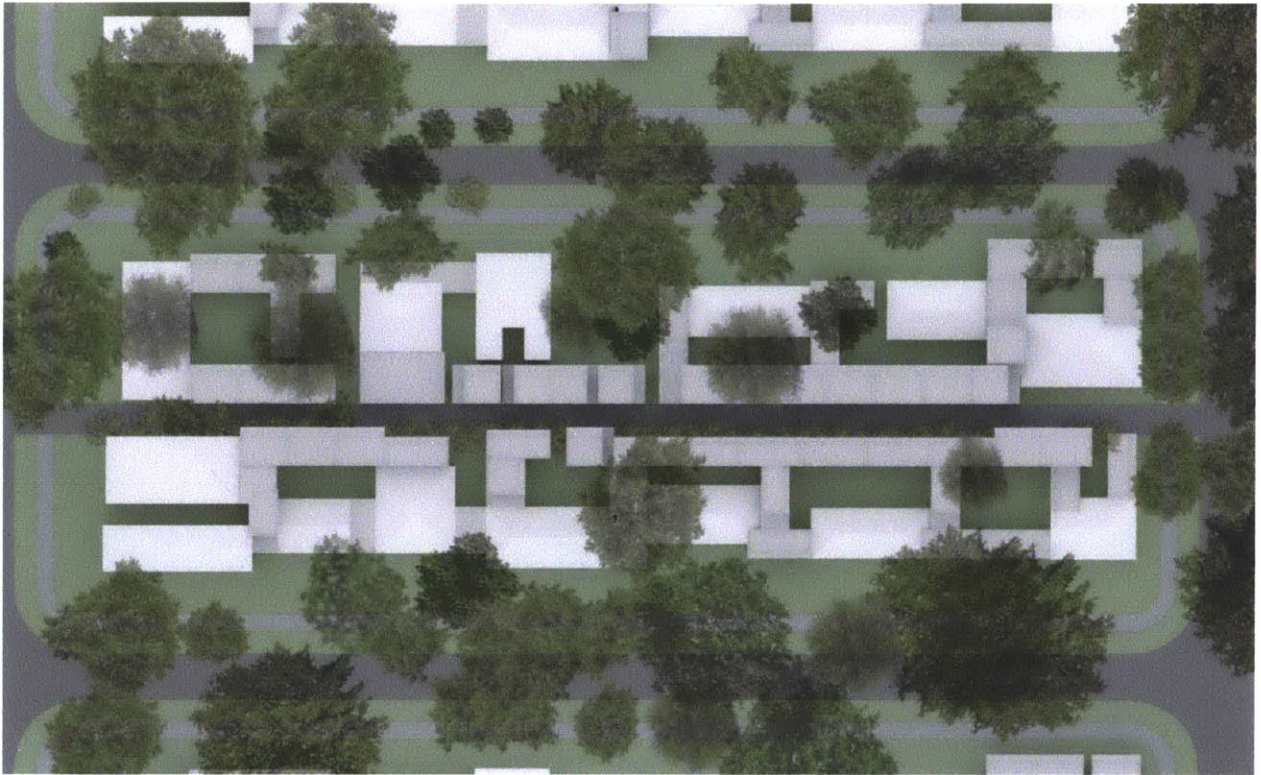


Sectional possibilities along the proposed alley condition





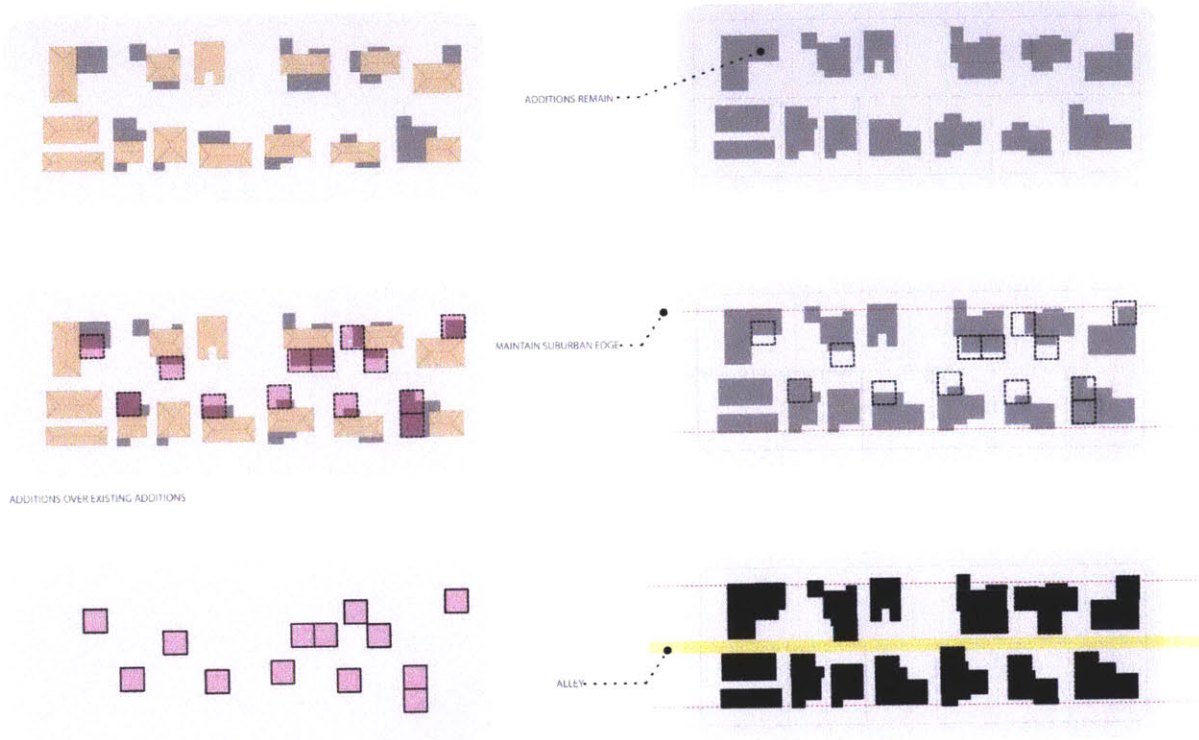
Schematic drawing of plan aggregations to create public space within the block



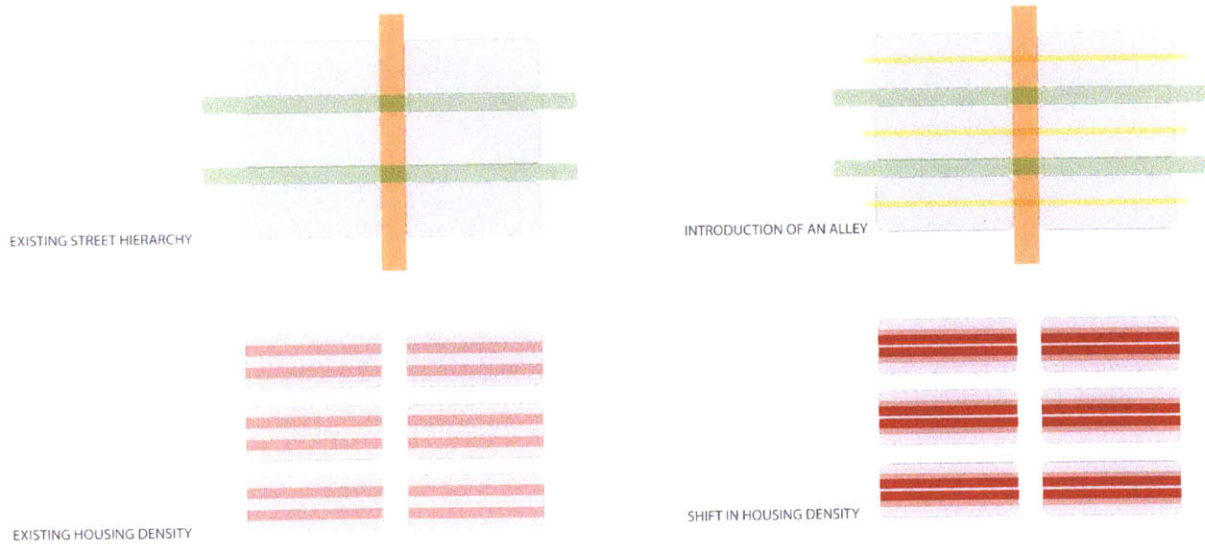
Plan and view of proposed plan with trees

“PARASITE” METHOD USING A COURTYARD TYPOLOGY

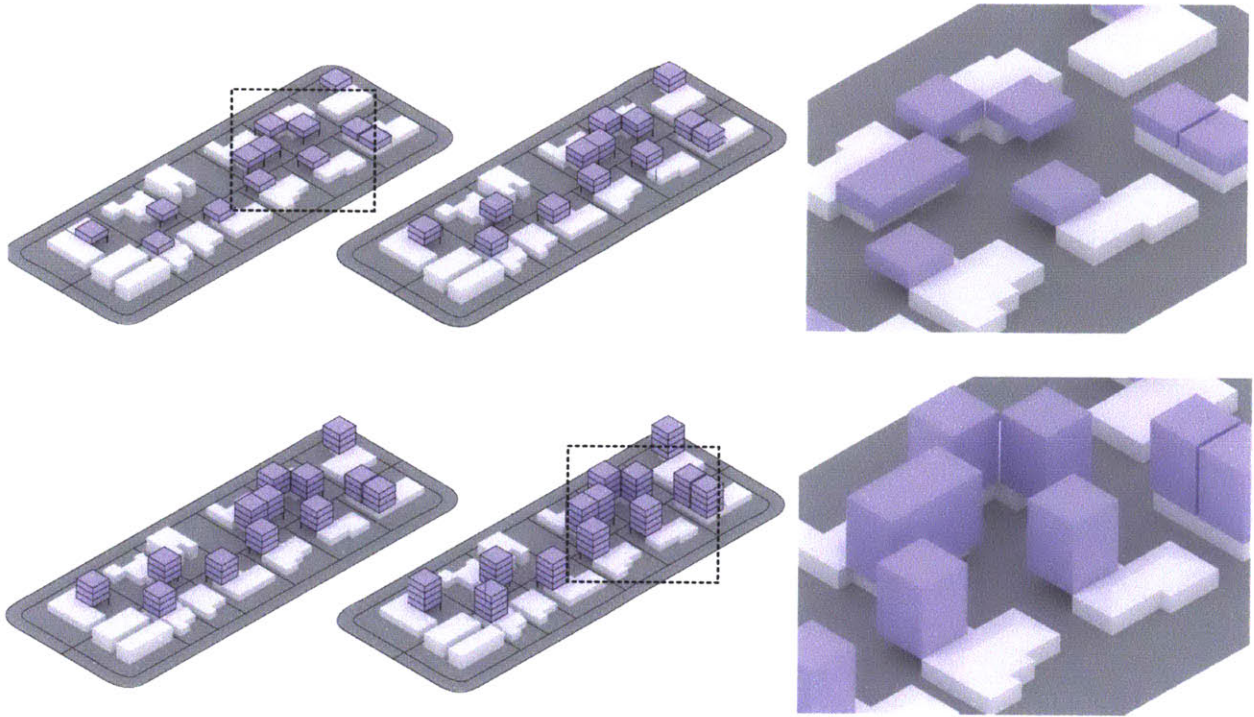
This method focuses on using existing additions to main structures as the formal and physical support for a supplementary ‘parasite’ courtyard building that offers great potential for vertical growth. The main organizational force behind this experiment was the existing additions to the main structures and the preservation of privacy characteristic of the courtyard typology.



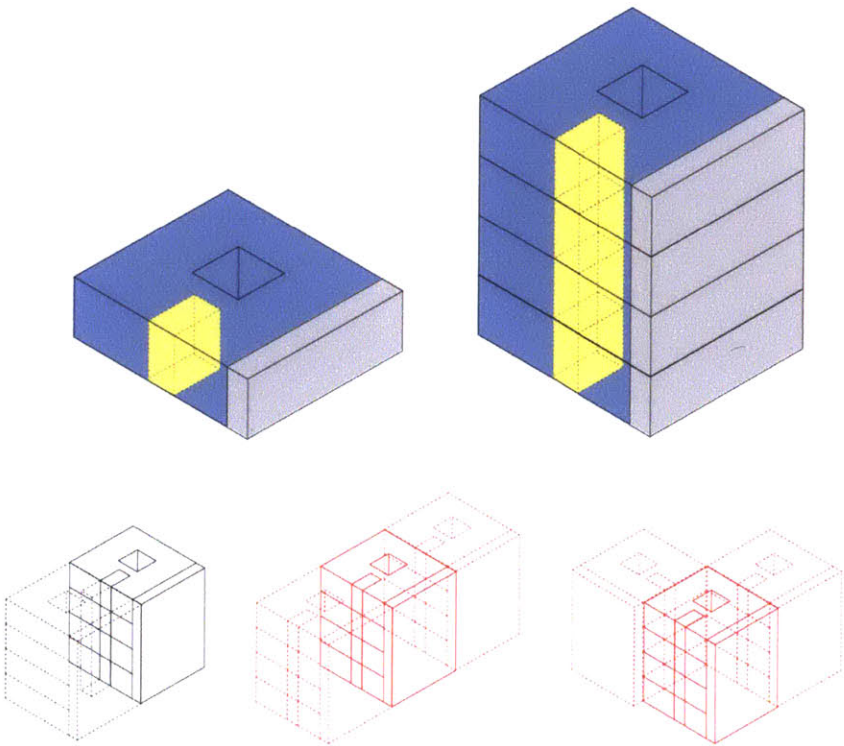
Urban strategies



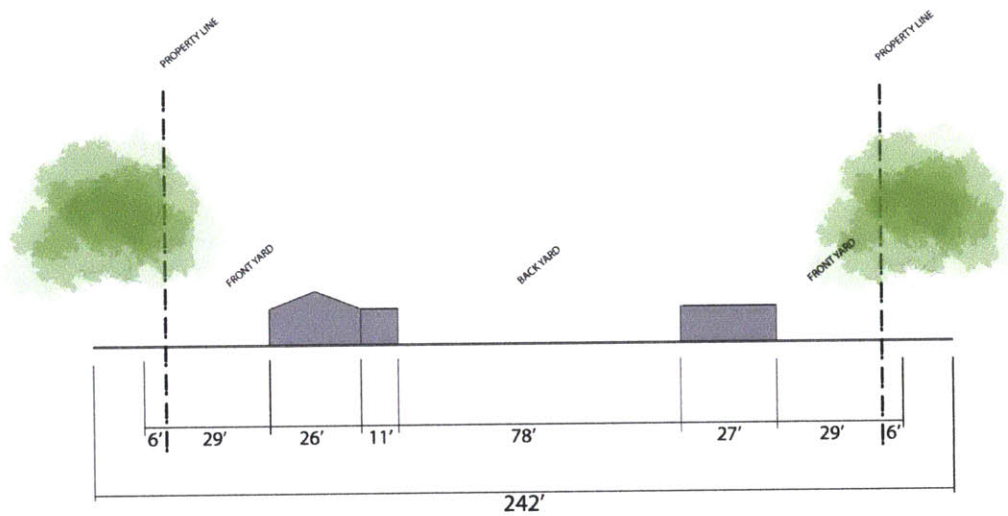
Morphological changes



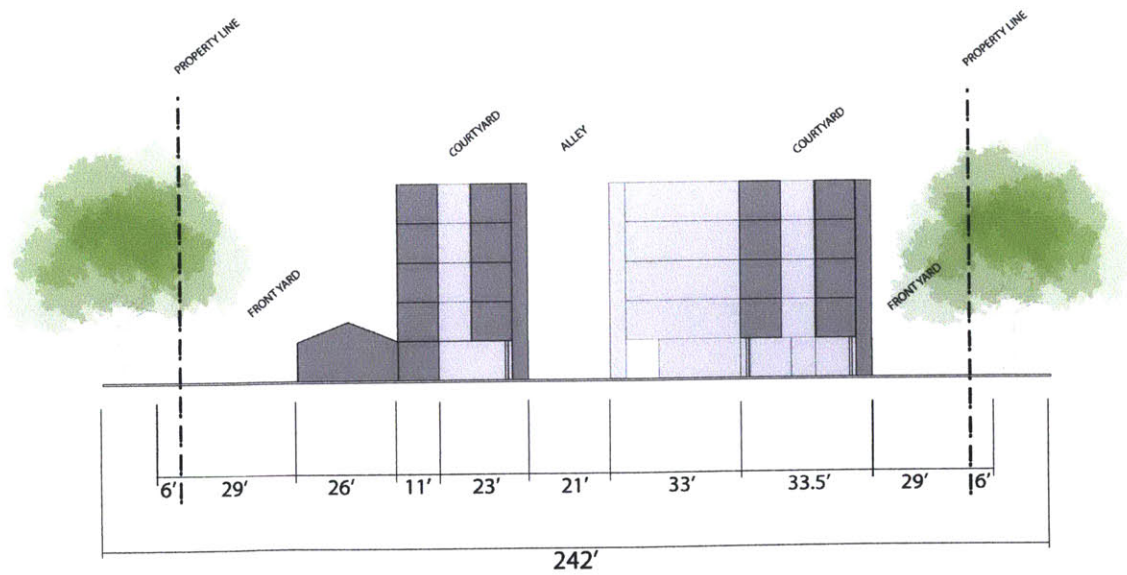
Massing diagrams of urban progression



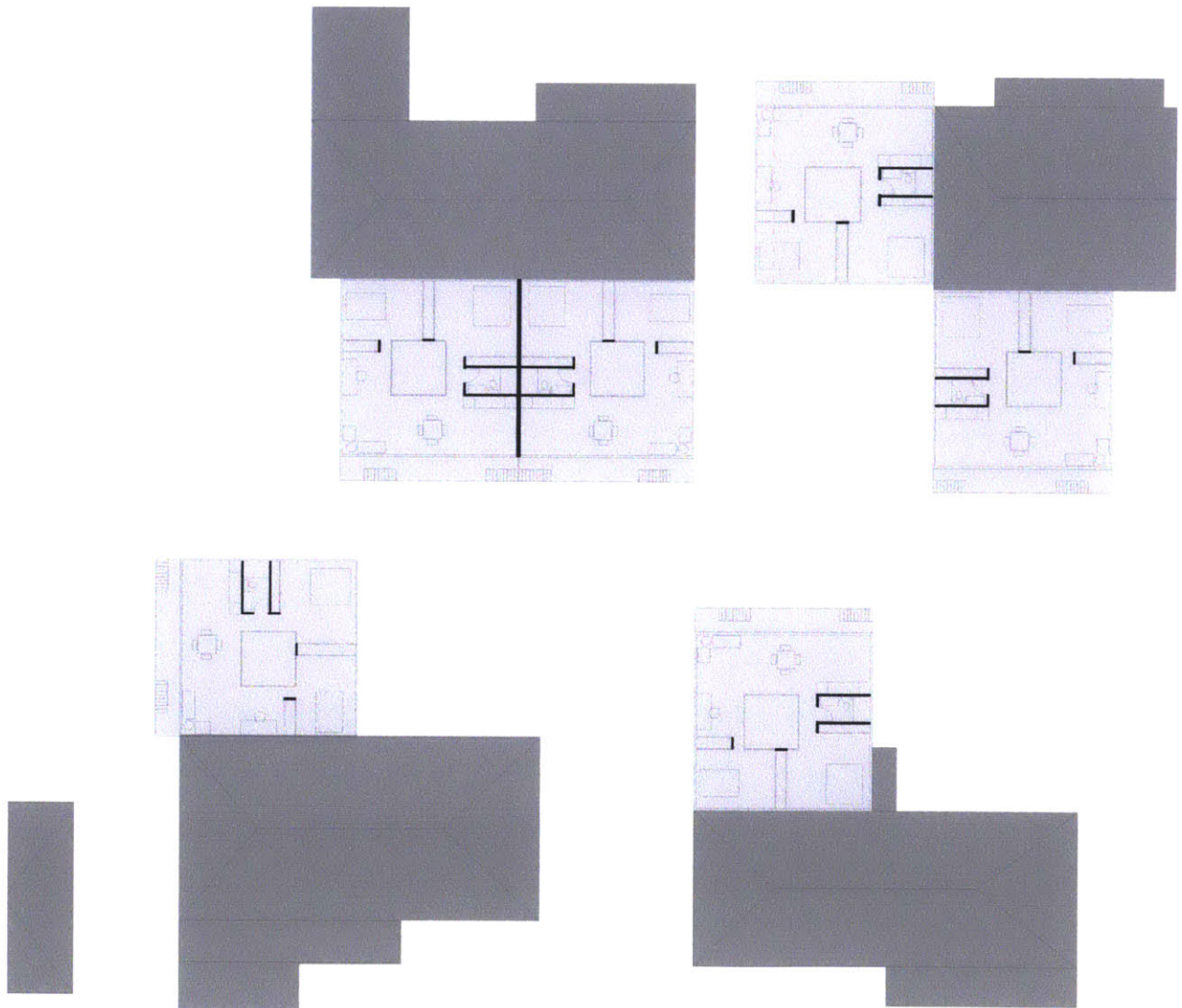
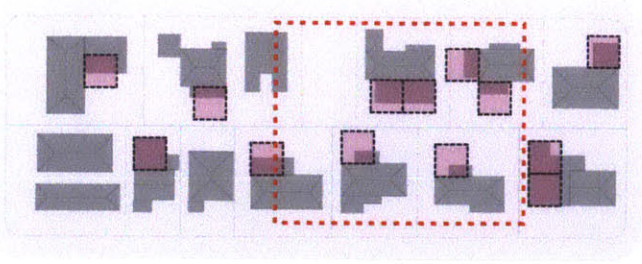
Core and circulation placement within the typology and aggregation diagram



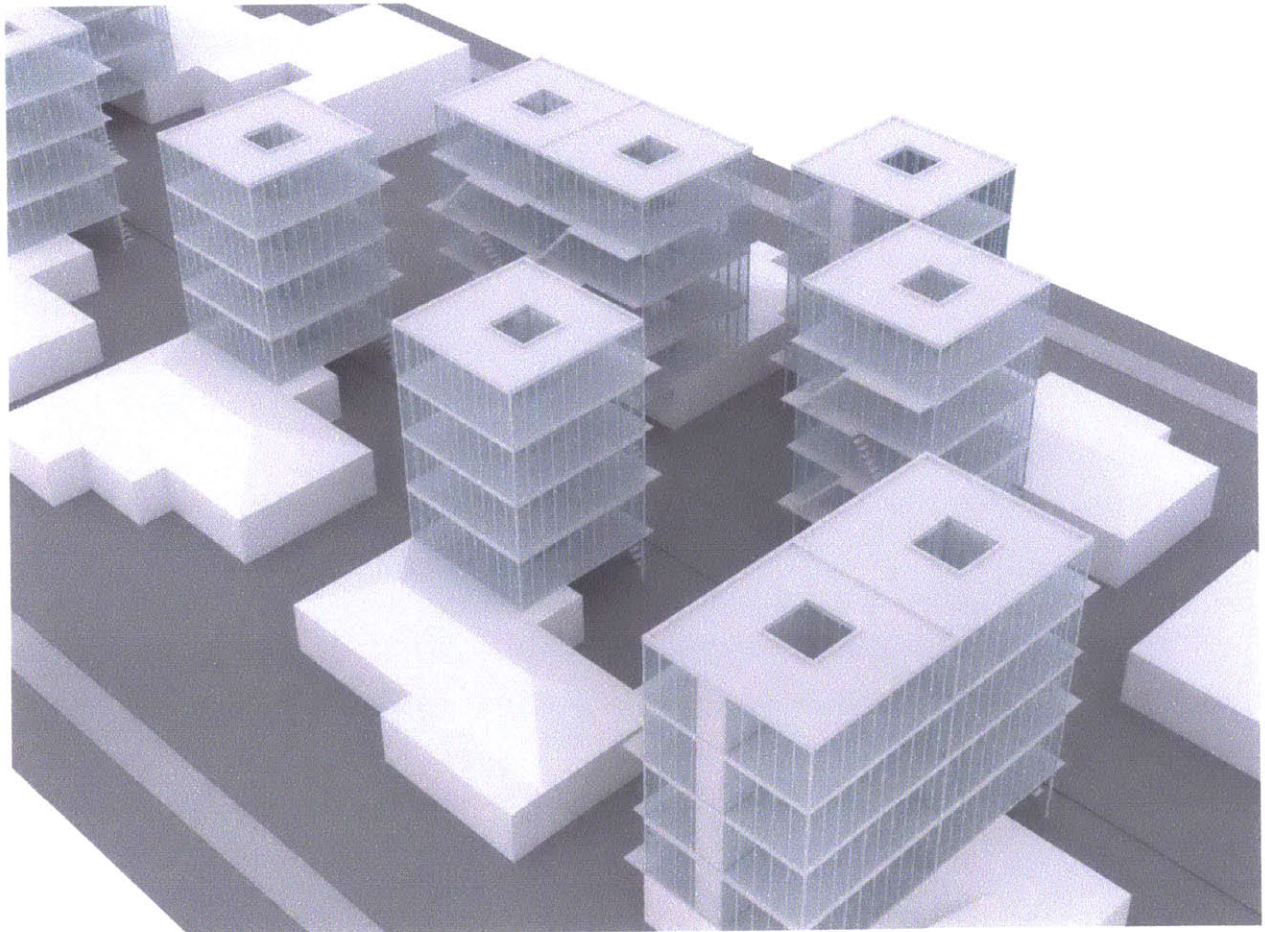
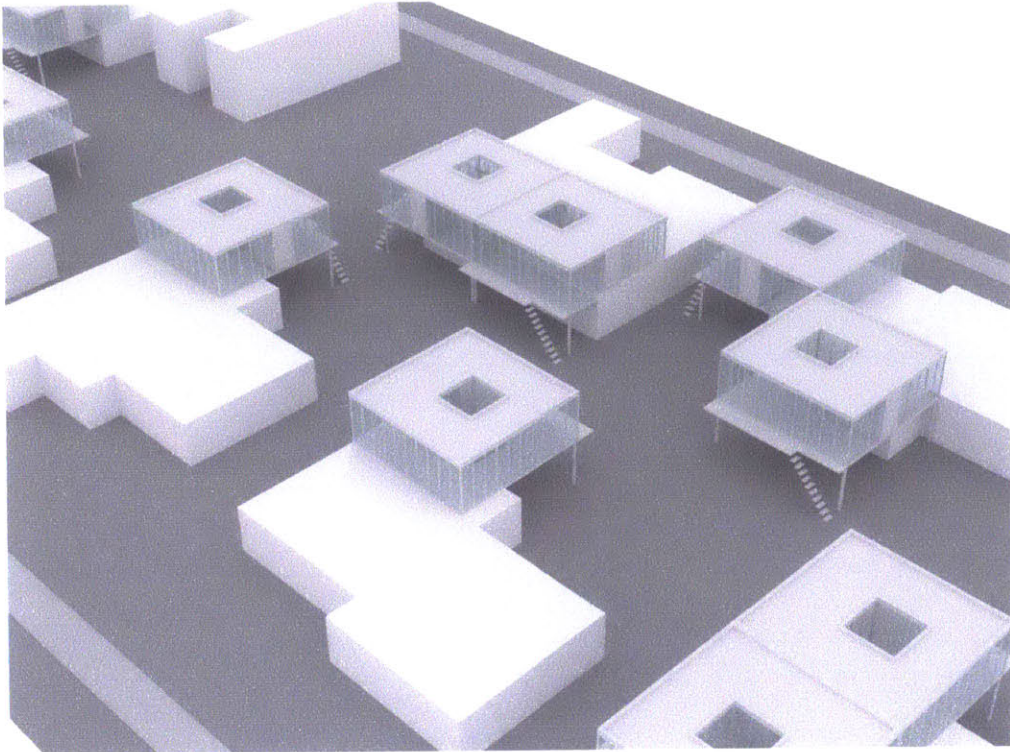
Section of existing condition



Section of proposed condition

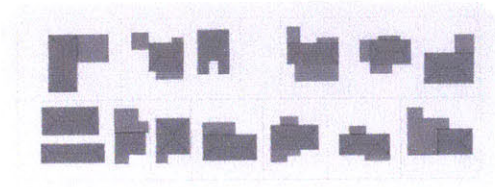


Schematic drawing of plan aggregations to create public space within the block

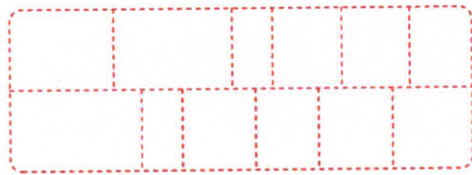
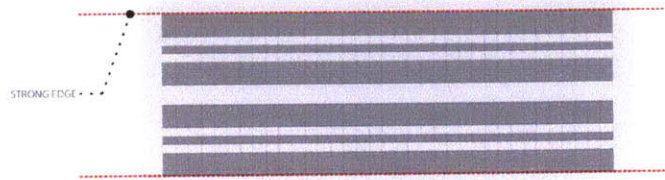


FABRIC “MAT” METHOD USING A ROWHOUSE TYPOLOGY

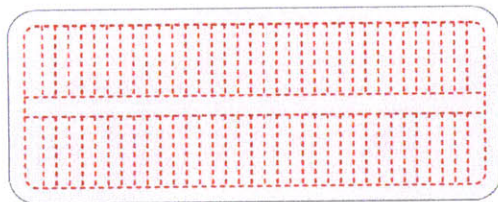
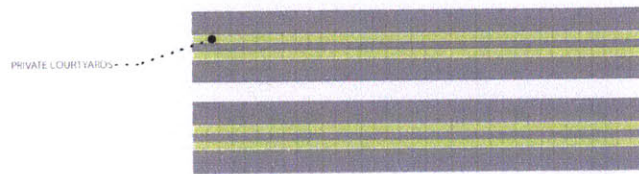
This method focuses on introducing a brand-new typology and urban morphology to the area, using a low-rise, high-density approach that offers one of the highest density possibilities. The main organizational force behind this experiment was the provision of highly-structured private exterior spaces in lieu of community spaces.



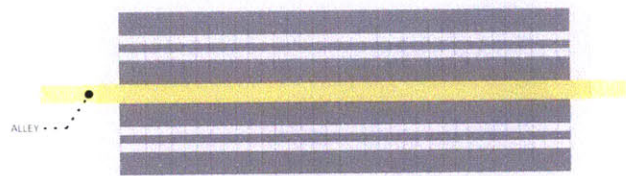
EXISTING CONDITION



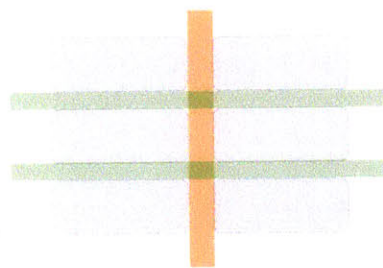
EXISTING PROPERTY LINES



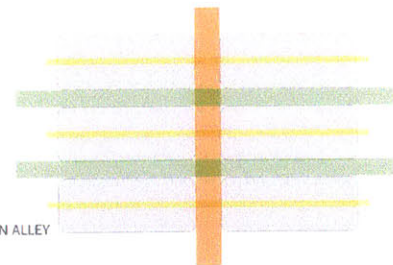
PROPOSED PROPERTY LINES



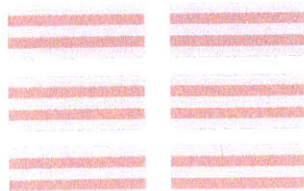
Urban strategies



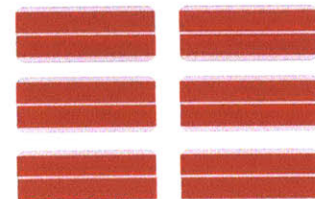
EXISTING STREET HIERARCHY



INTRODUCTION OF AN ALLEY

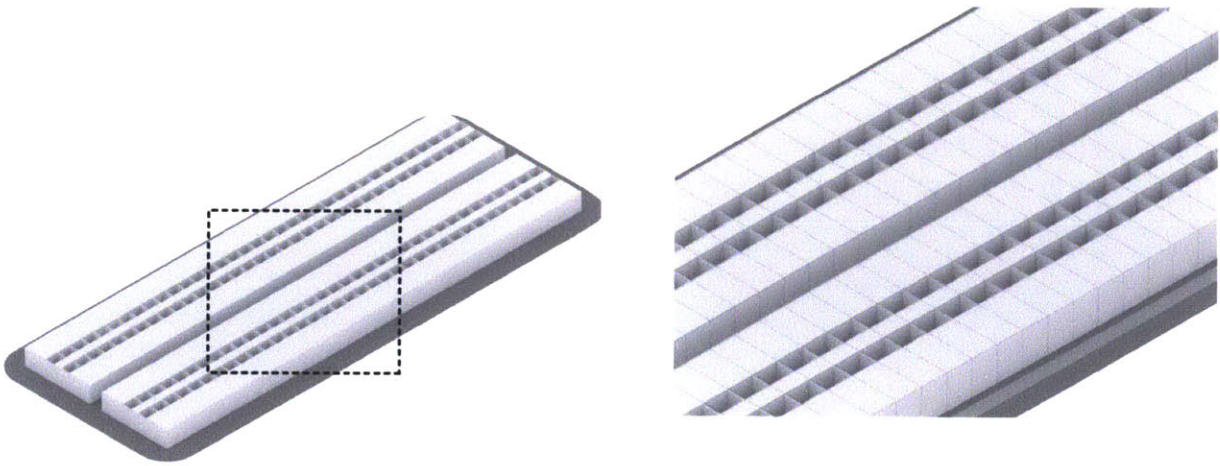


EXISTING HOUSING DENSITY

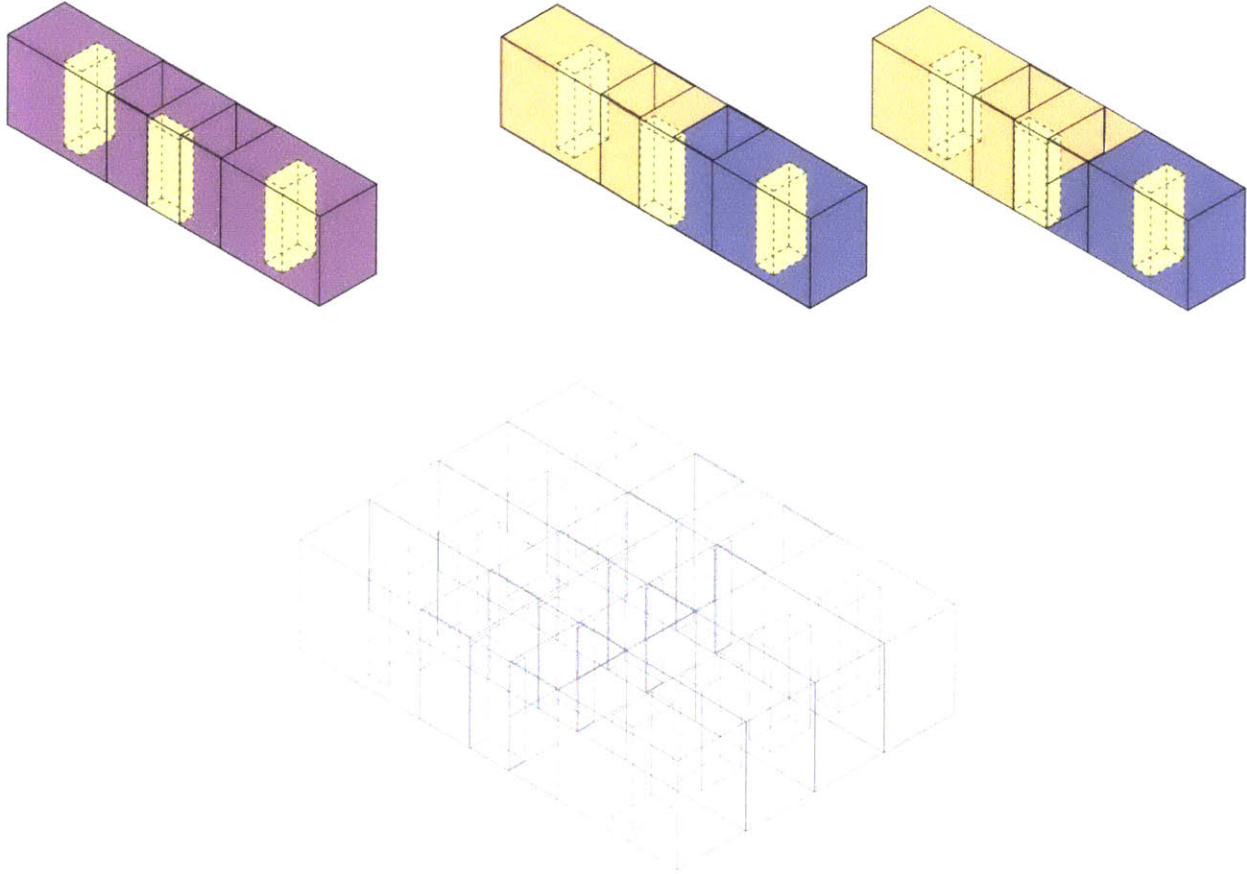


SHIFT IN HOUSING DENSITY

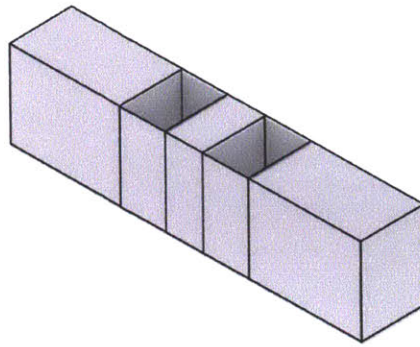
Morphological changes



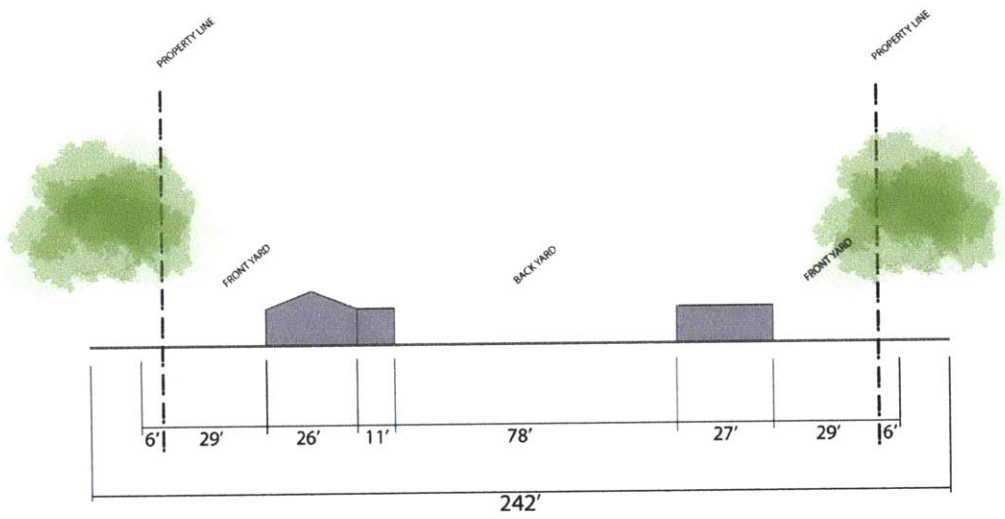
Massing diagrams of proposed 'urban mat'



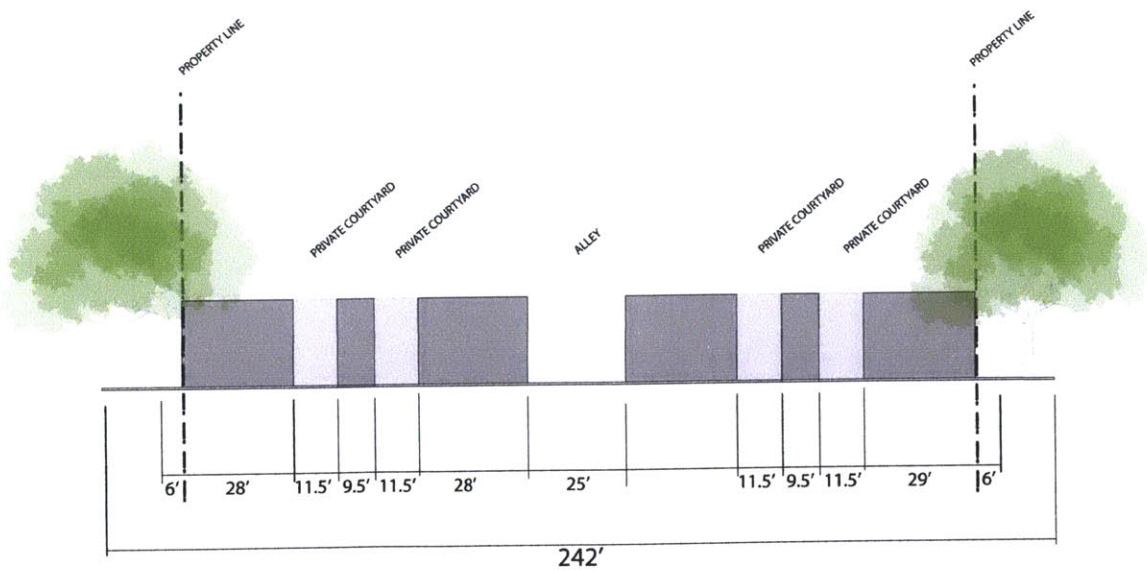
Core placement within the typology, ownership possibilities of middle massing and aggregation diagram



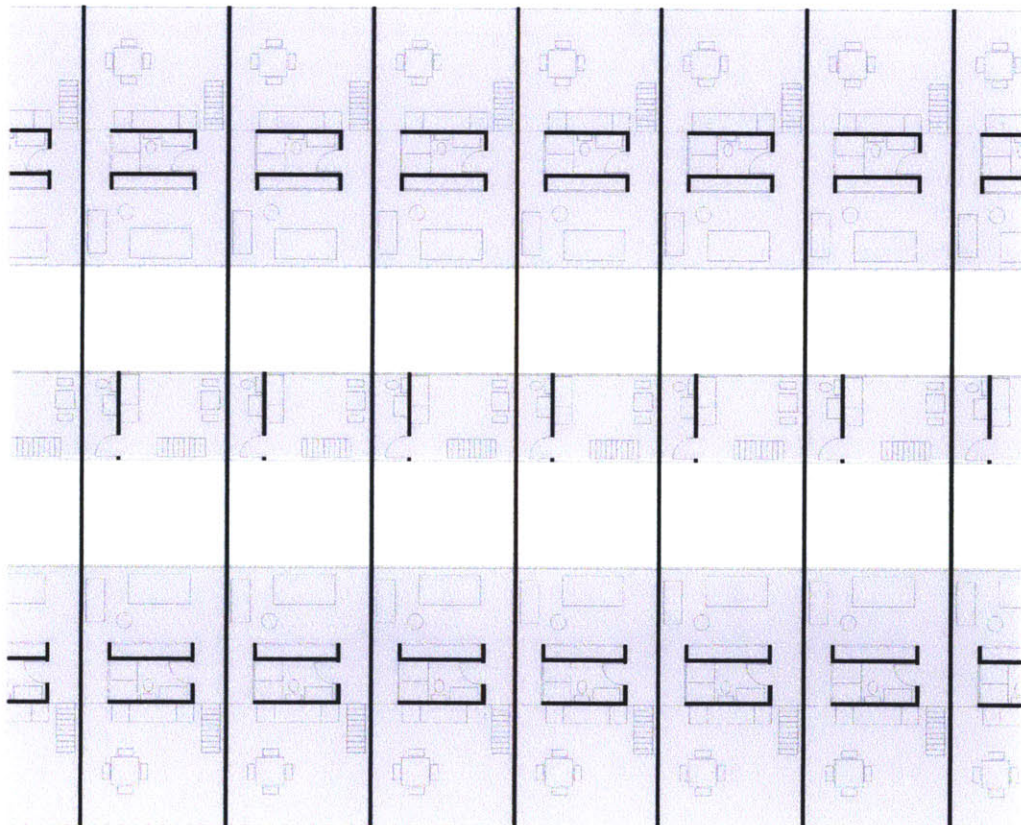
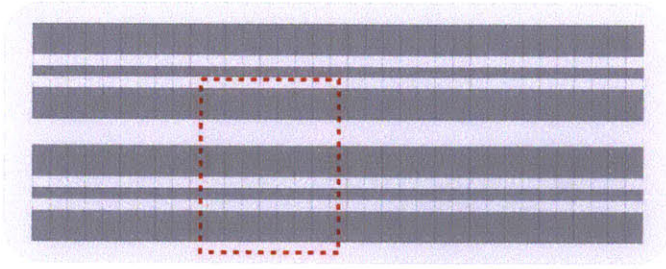
Massing of two-house aggregation for the rowhouse typology



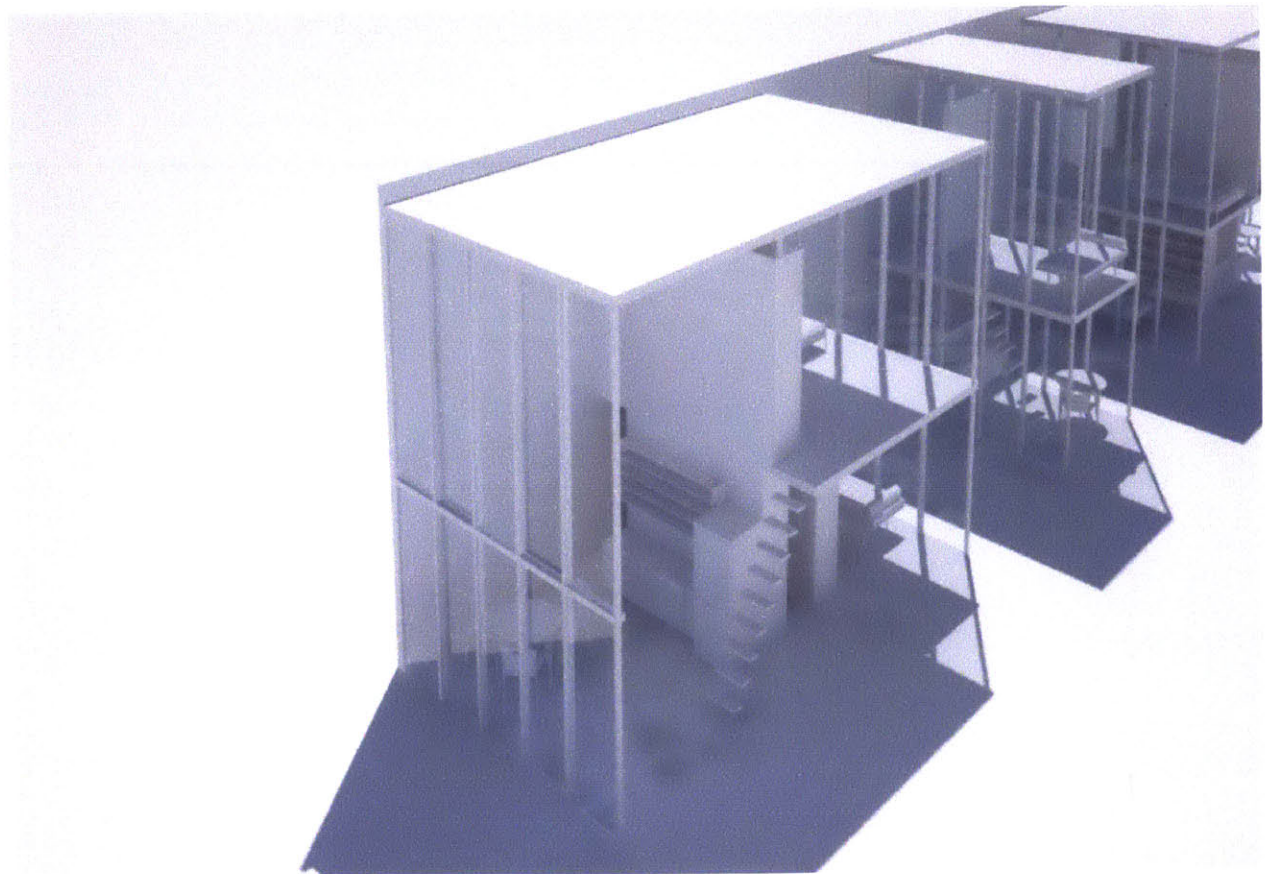
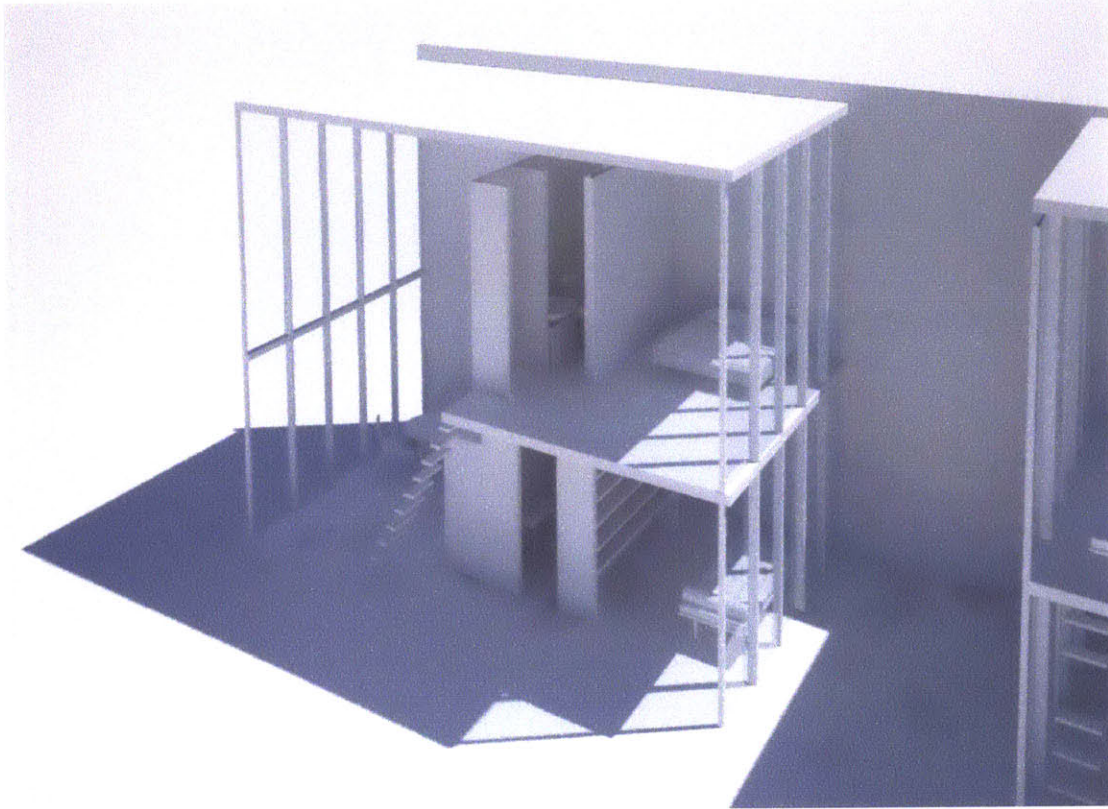
Section of existing condition



Section of proposed condition

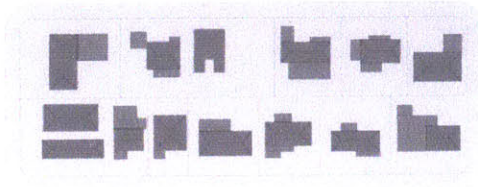


Schematic drawing of plan aggregations to create private open space within the block

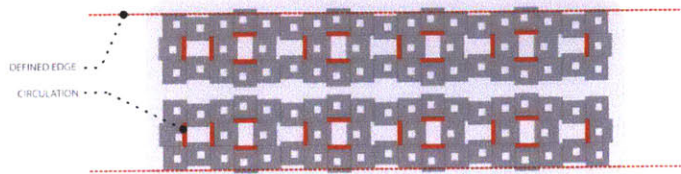


FABRIC “MAT” METHOD USING A HYPER-AGGREGATED COURTYARD TYPOLOGY

This method focuses on the aggregation of courtyard typology in a manner that attempts to promote public space despite the typology’s characteristic private nature. This method offers the highest density possibility out of all these experiments. The main organizational force behind this experiment was to provide the highest density possible while still maintaining adequate light and ventilation for the units towards the mid-block.



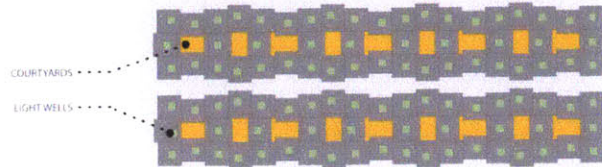
EXISTING CONDITION



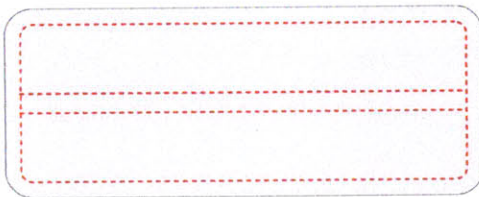
DEFINED EDGE
CIRCULATION



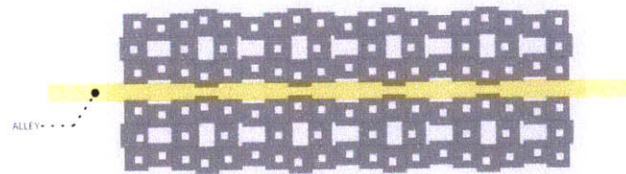
EXISTING PROPERTY LINES



COURTYARDS
LIGHT WELLS

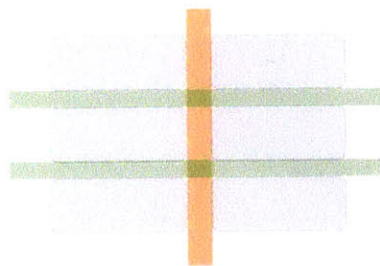


PROPOSED PROPERTY LINES

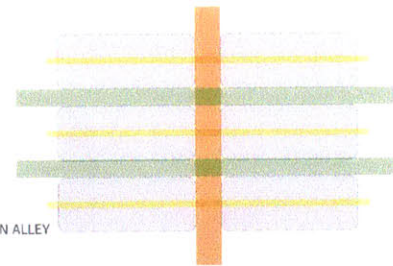


ALLEY

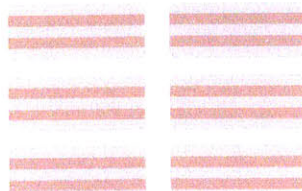
Urban strategies



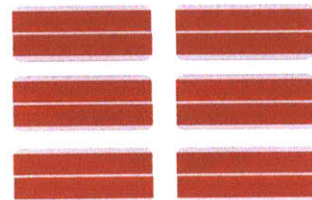
EXISTING STREET HIERARCHY



INTRODUCTION OF AN ALLEY

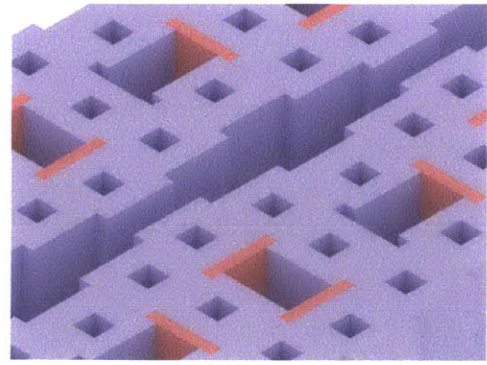
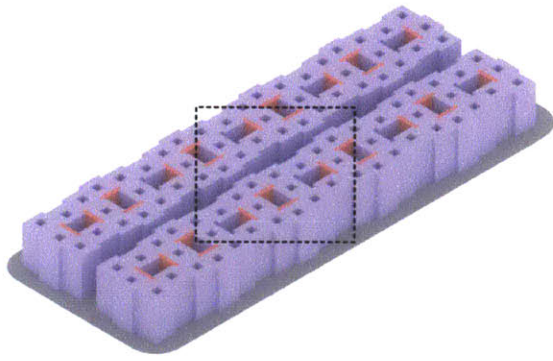


EXISTING HOUSING DENSITY

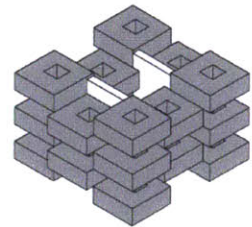
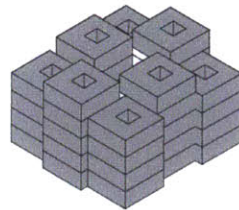
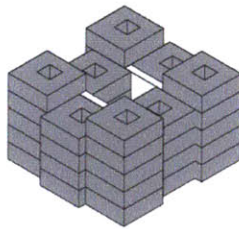
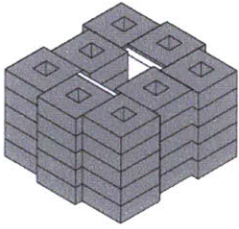


SHIFT IN HOUSING DENSITY

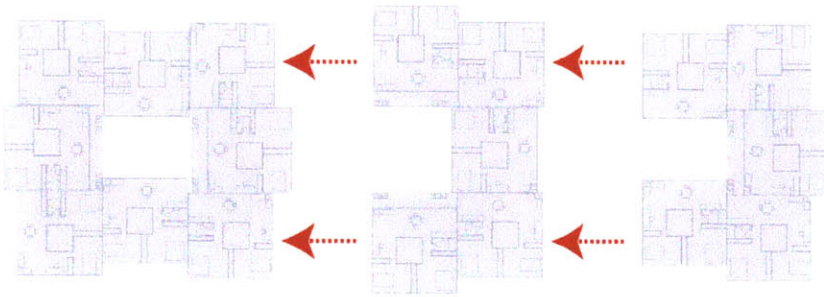
Morphological changes



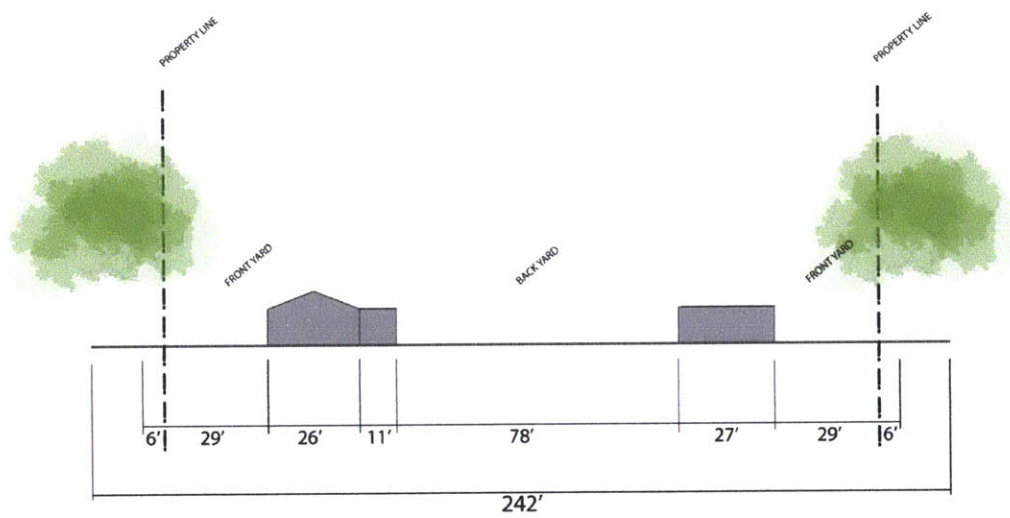
Massing diagrams of proposed hyper-aggregated, mid-rise 'urban mat'



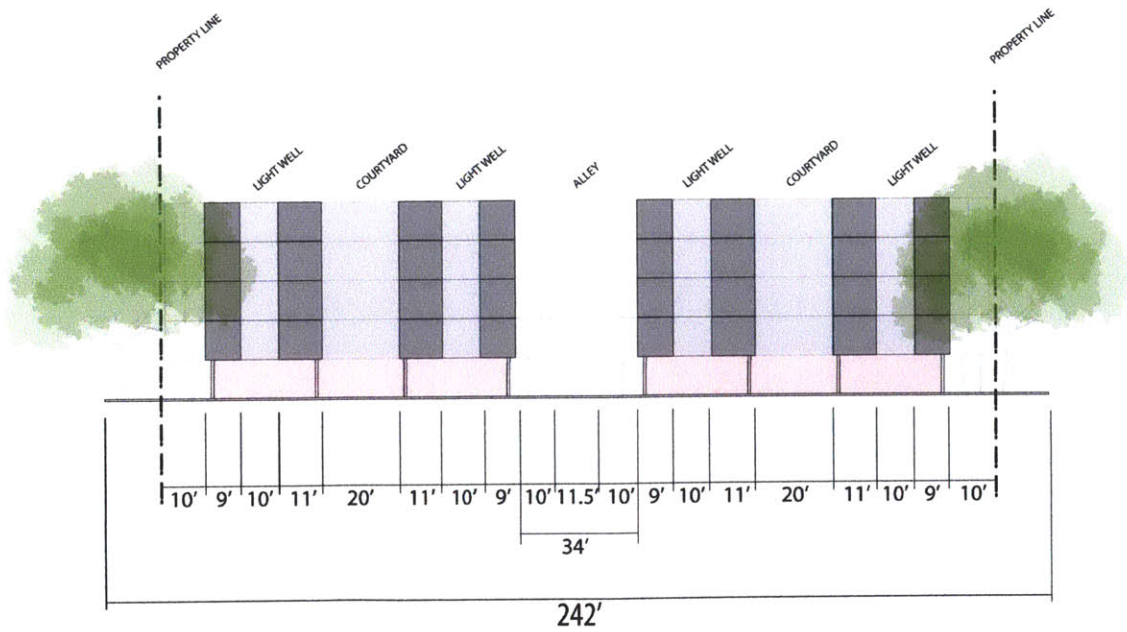
Diagrams of possible aggregation methods



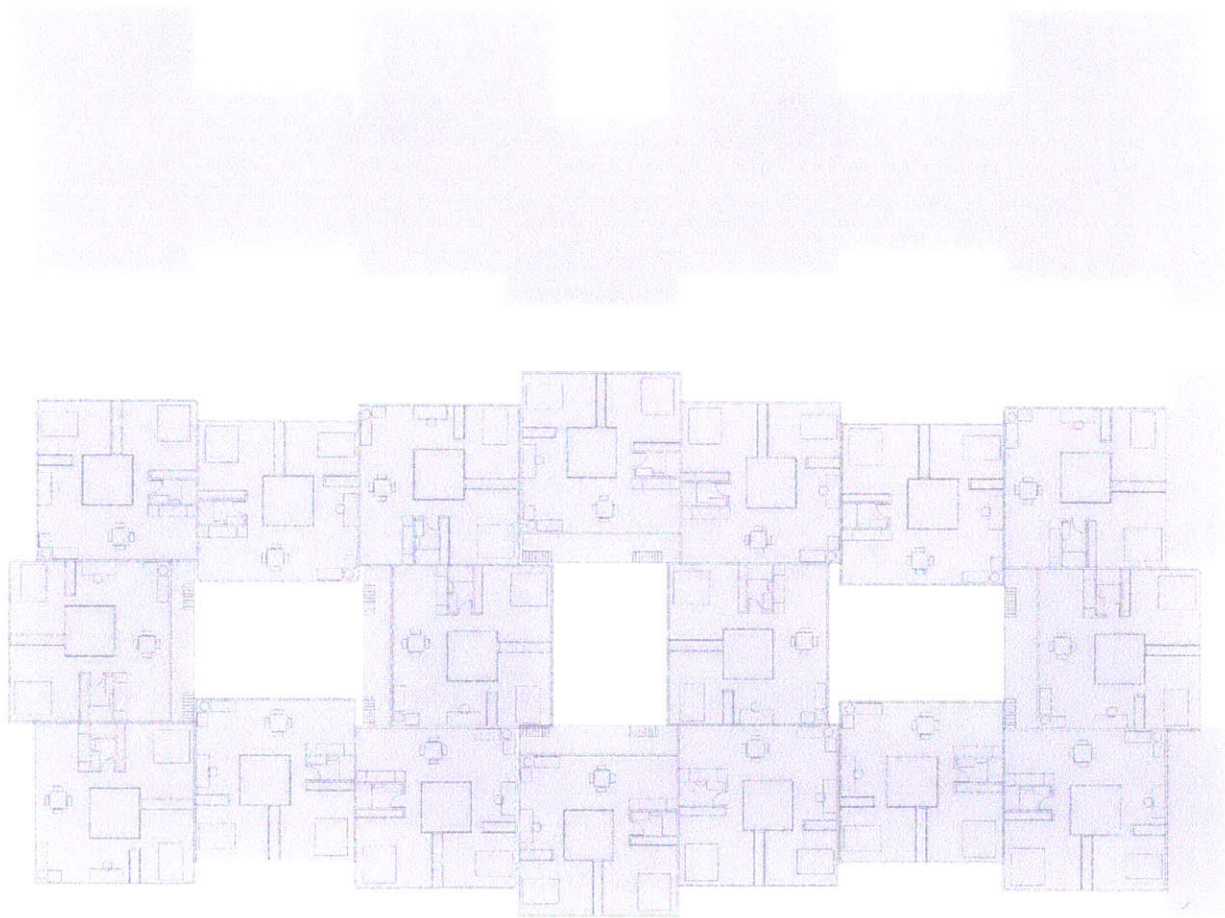
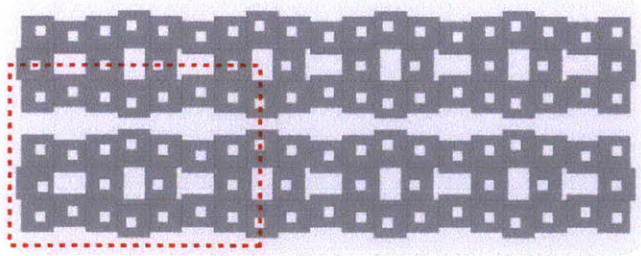
Aggregation diagram and circulation core placement within the typology



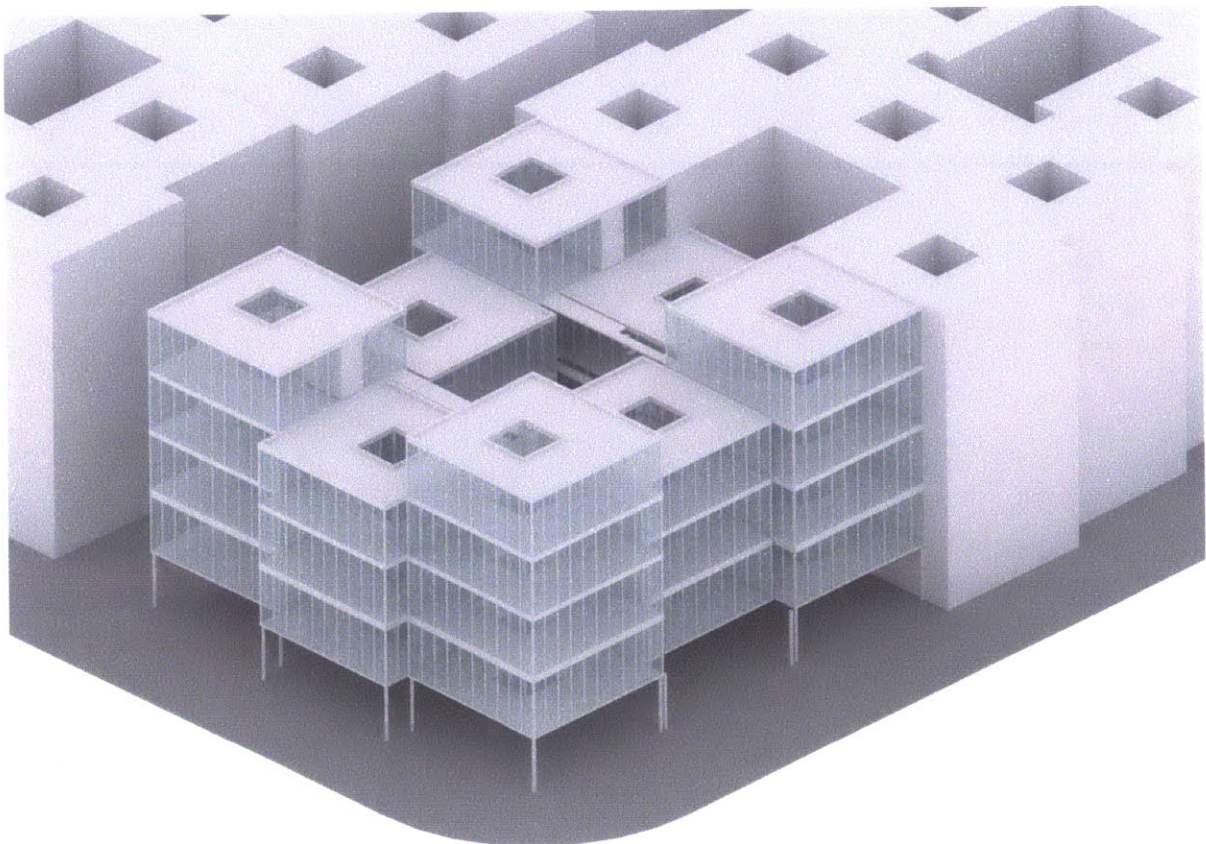
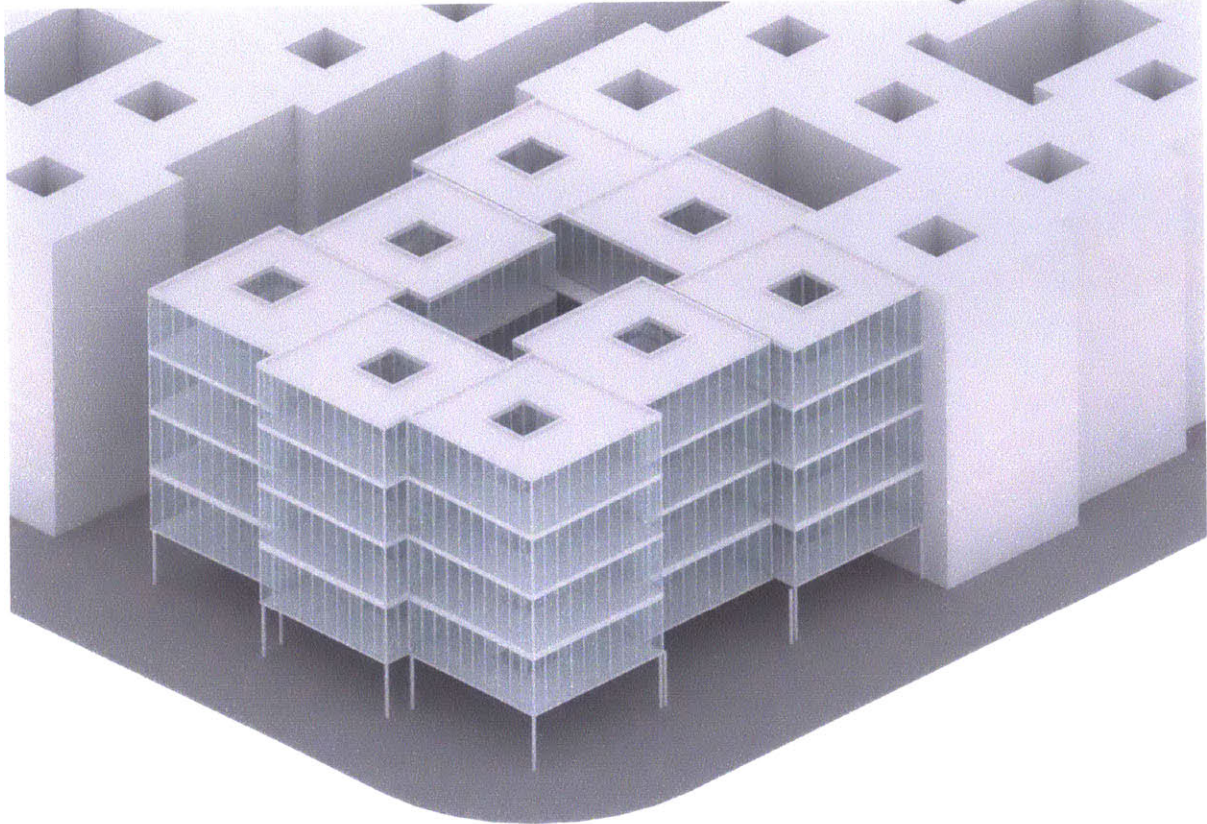
Section of existing condition

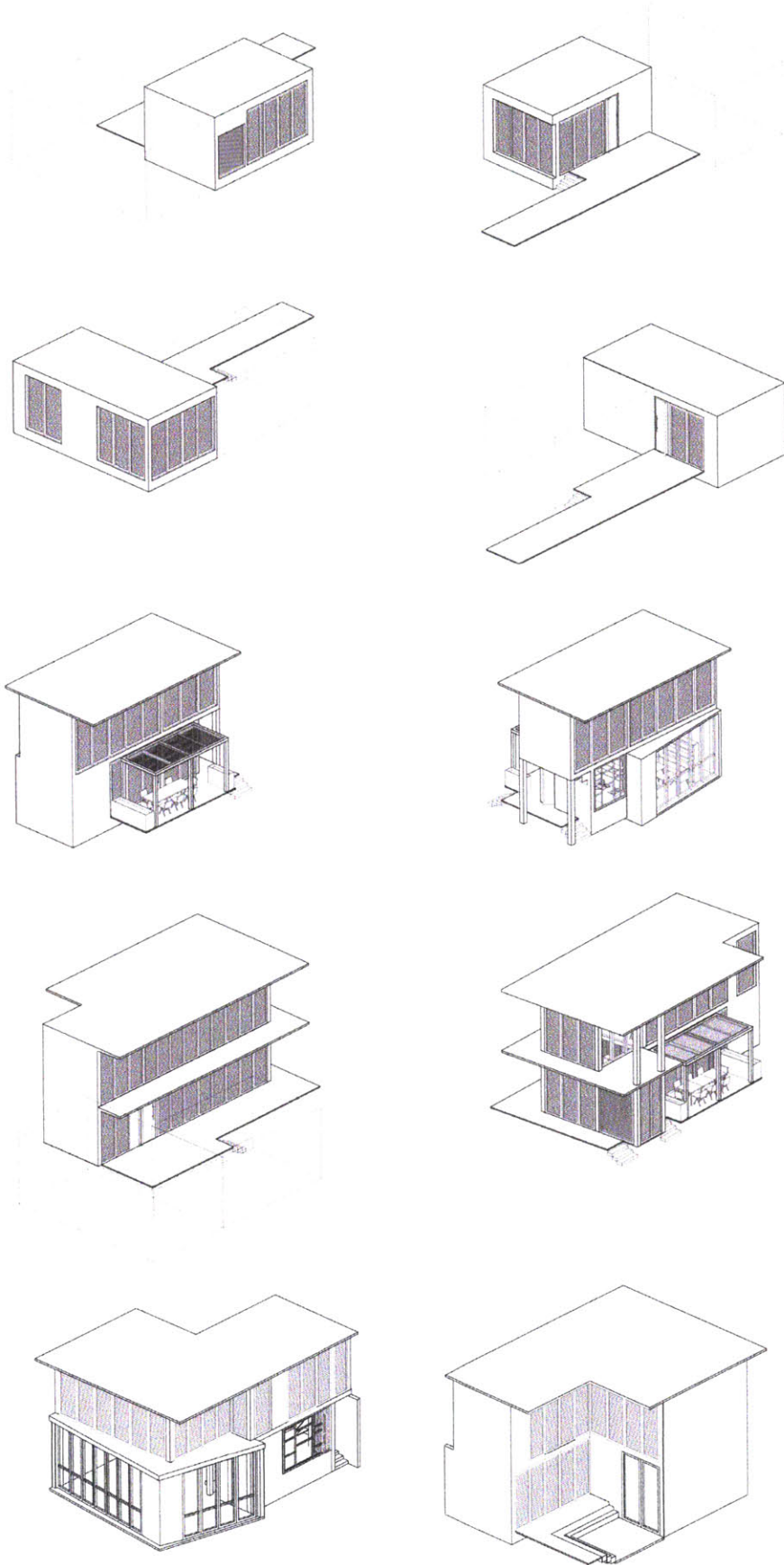


Section of proposed condition



Schematic drawing of plan aggregations to create semi-private open space within the block





THE PROJECT

Botero 61



Existing Site plan of selected neighborhood area of Coral Gables

THE PROPOSAL

This project is a case study that addresses several urban challenges in Coral Gables, Florida through the proposal of a new building typology. Despite the regional specificities of urban morphology and architectural typology, the project is based on the premise of densification mostly through residential infill and therefore, it provides guidelines for the densification of any urban suburb. The project not only addresses the current challenges of a growing population near metropolitan city centers, but also focuses on major lifestyle changes that have occurred in the last fifty years and that have not been adequately addressed in contemporary housing design.

The first and most apparent challenge in Coral Gables is the need for higher density in order to accommodate for an expected population increase. This is an intricate challenge since the increase in population means there will also be a more diverse demographic expected in the area. Ultimately, this will create a need for lower housing prices and higher rental availability. In light of the shift in family life in the last 50 years, and the new need for more affordable living spaces, the best solution is to propose considerably smaller quality homes to infill the urban suburbs rather than inexpensively-built standard homes farther from the city center. The aim is to create a more



Proposed block plan within existing site plan of selected neighborhood area

diverse community that can accommodate the population increase and the demographic shift. Aside from providing a higher capacity for residential buildings, the hope is to create a typology that can serve as small workshops, offices and in some cases as retail space. This will allow the neighborhood to respond financially as the population density increases.

The next challenge is to maintain the tree line and the availability of green open spaces, two of the most notable characteristics of Coral Gables. This challenge is at odds with the first challenge since an increase in built density will inevitably impact the availability of unbuilt and thus provided green space. The best

response to this challenge is to create better defined more refined legislative parameters for the green spaces with more specific private, semi-private and public functions within the neighborhood blocks. The aim is to establish more significant green spaces that the community can use in more accessible ways. This will ensure that despite the reduction in green area, the new spaces will have more apparent and practical functions, giving them tangible community value, which will in turn, promote their success and longevity.

In order to respect the character of the tree line, the majority of the density increase will be focused away from the existing neighborhood

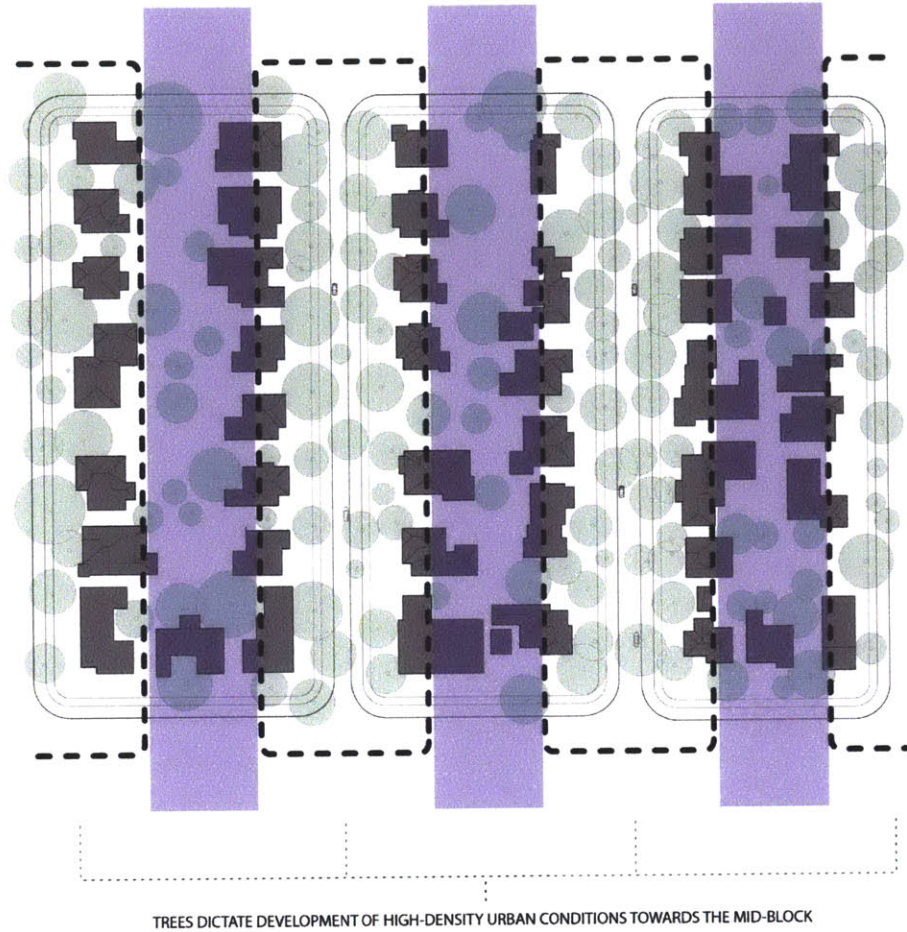


Diagram of proposed density areas within existing neighborhood fabric

streets and placed towards the middle of the existing block, mostly in the large, unstructured areas that are currently oversized backyards. With the intention of establishing and maintaining a strong urban edge, the proposed houses that face the existing street are built close to the existing sidewalk and rise no more than twelve feet, preserving the swales beyond where the trees are planted. Since the mid-block area has the highest proposed density, it requires a change in the

street morphology in order to urbanistically respond to the density increase. This drastic change takes the form of an alley that cuts the block parallel to its longer dimension. In this urban response, we begin to see the close relationship between the new housing typology and the resulting city morphology. The smaller, single-wide house generates a density that requires service from the city grid, prompting an extension of such grid into the existing block.

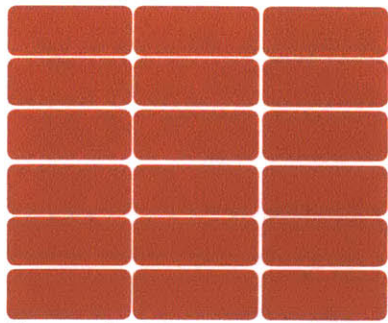


Diagram of existing street morphology

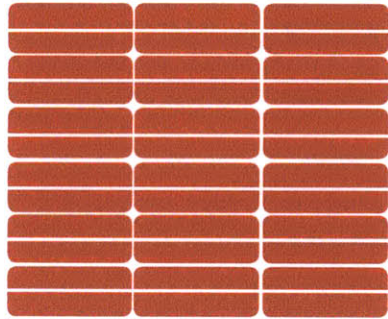
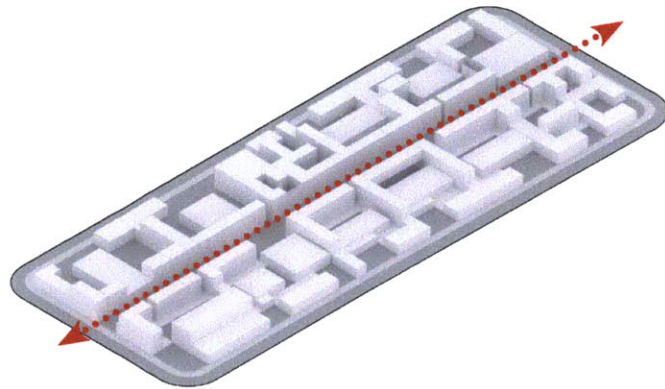


Diagram of proposed street morphology, including tertiary alleys



Axonometric of proposed block plan with arrow indicating through-alley

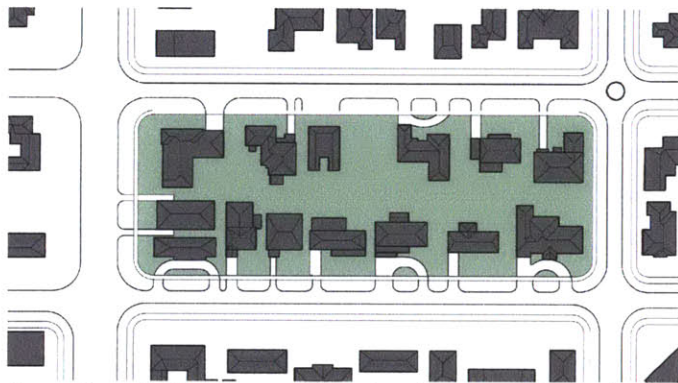


Figure-Ground of Existing condition, showing an undefined urban edge and underdesigned green spaces

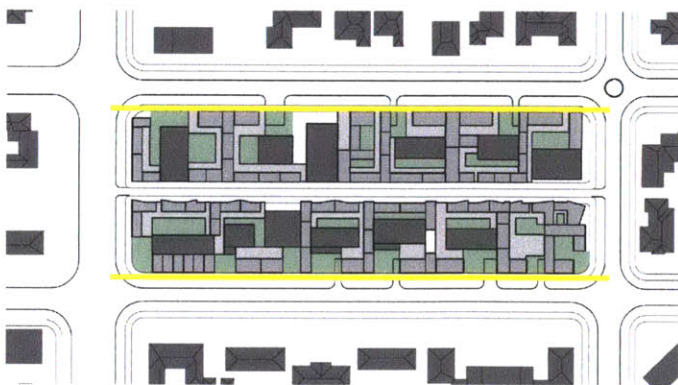
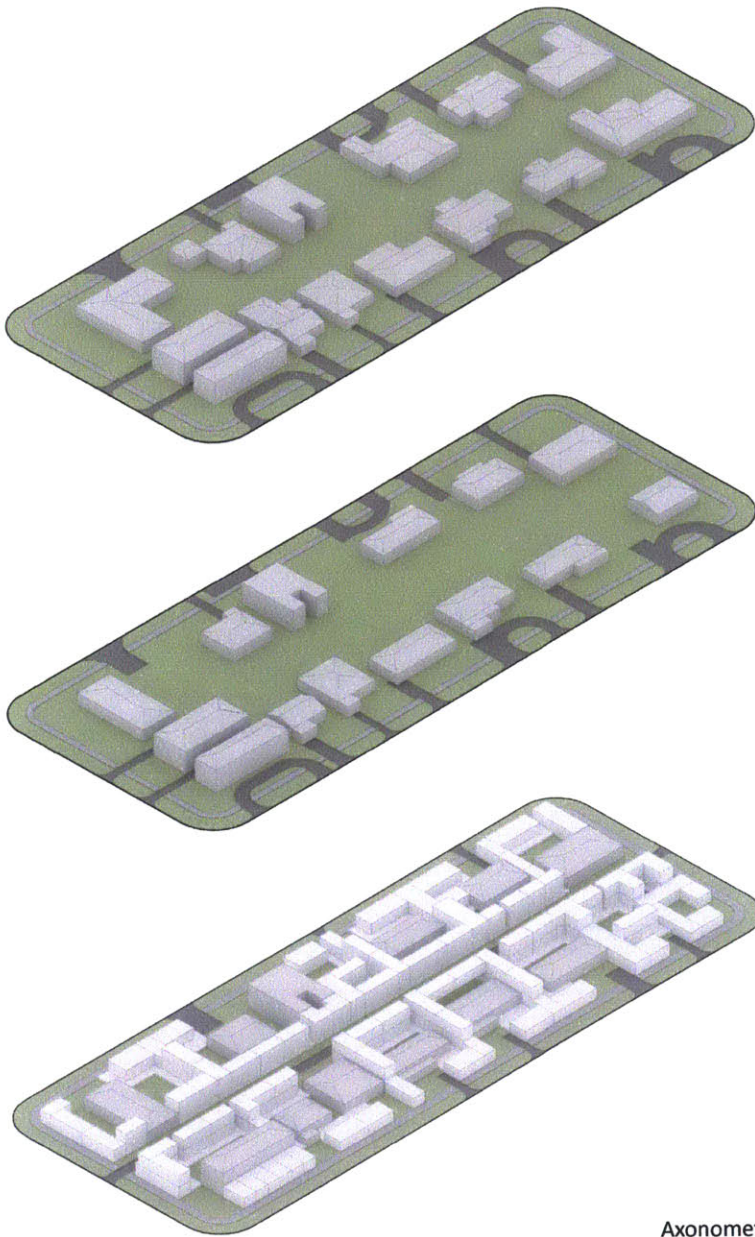


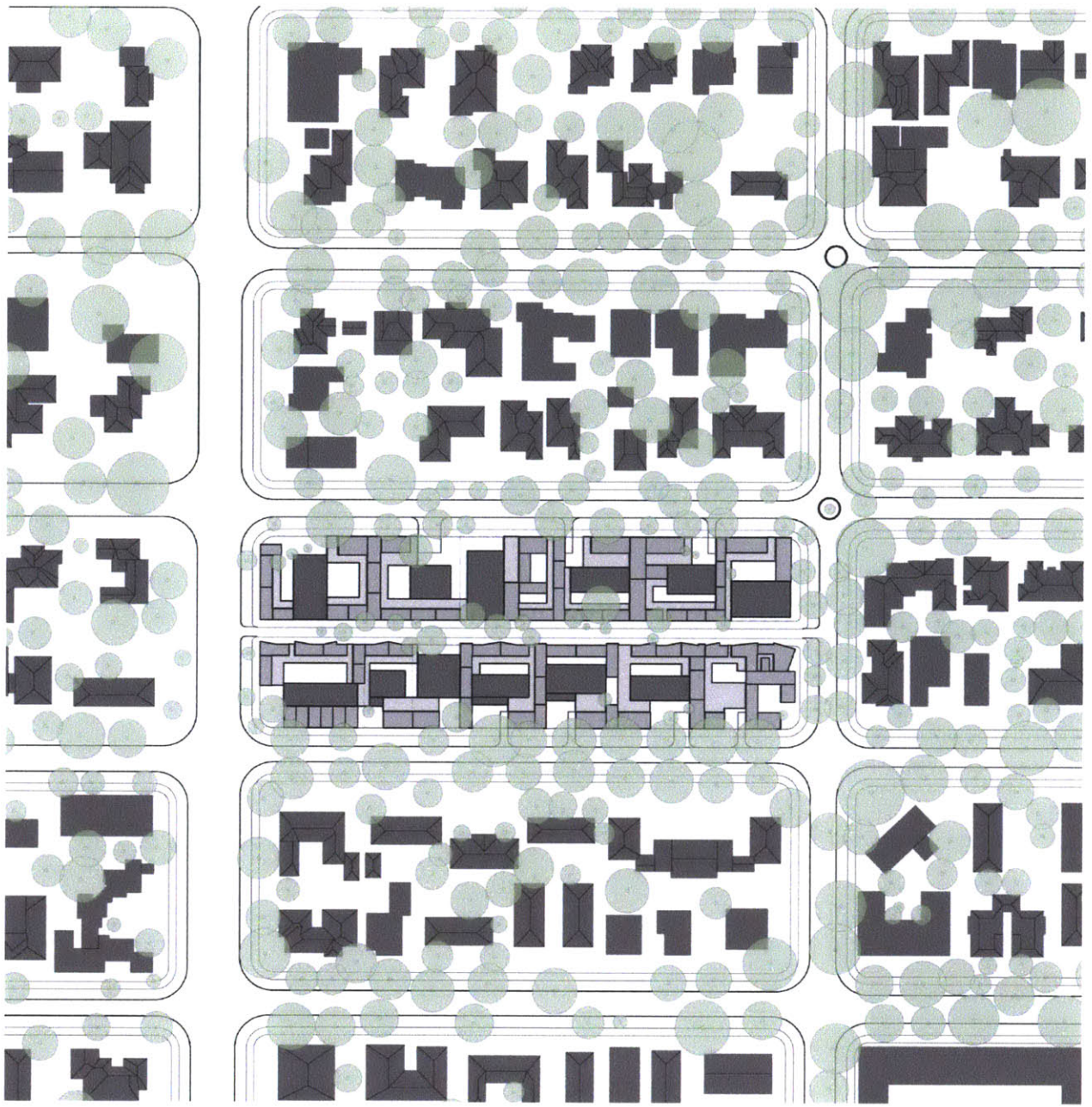
Figure-Ground of Proposed condition, showing a defined urban edge and regulated green spaces



Axonometric Diagrams of block proposal showing progression from existing condition (top) to original buildings without additions (middle) on which the proposed scheme was planned (bottom).

As a result of creating a new urban morphology, the alley offers a completely new urban condition to the neighborhood. Since it is designed around the premise of a higher density, the alley can also offer the possibility of programmatic variety, which in turn, promotes greater community diversity

through the prospect of live-work spaces and other small business establishments aligned and serviced with these interior access routes. The idea is that these multi-use spaces can adjust to changing population size, economic conditions and demographic changes so that the neighborhood is more resilient.



Proposed Site Plan

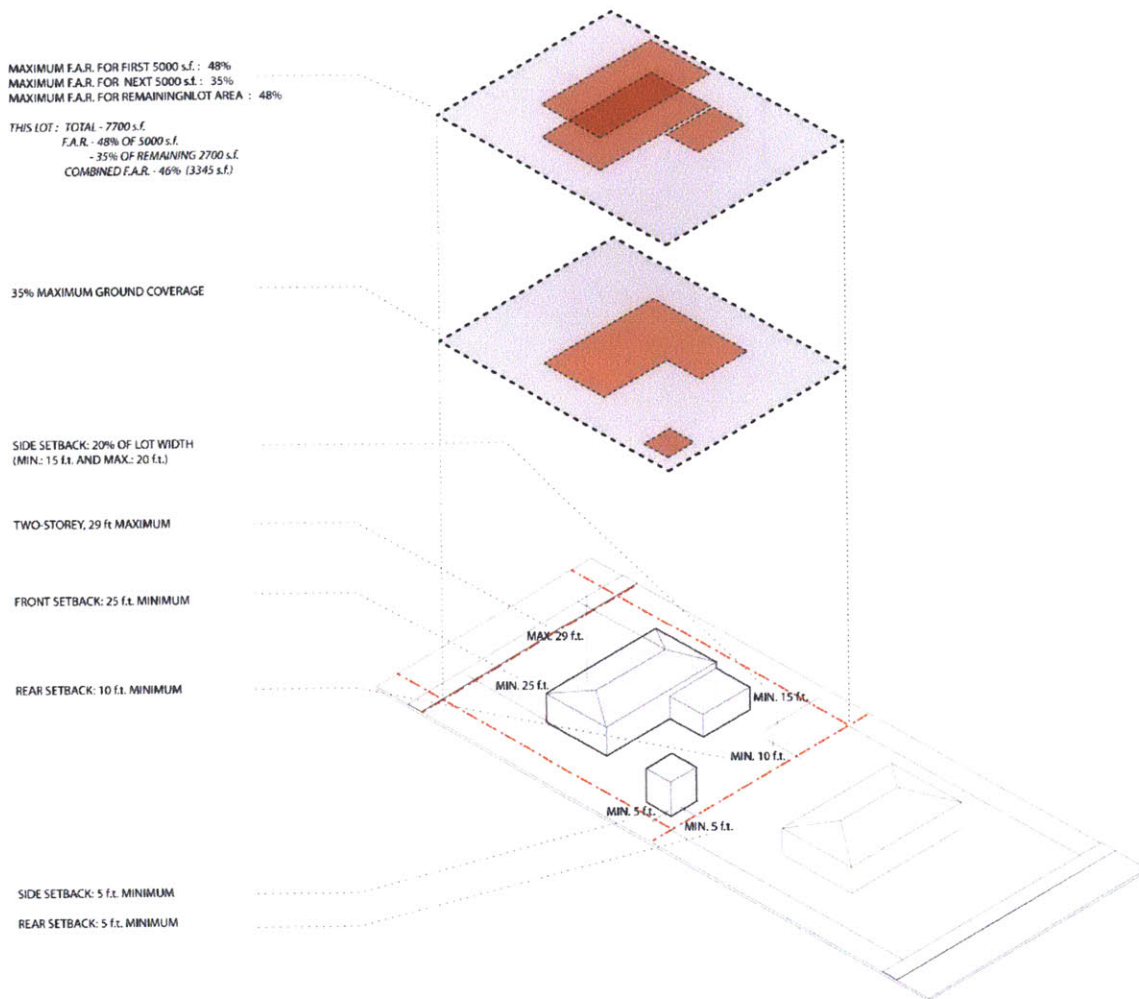


Diagram of existing building code guidelines in Coral Gables and the typical resulting urban form

The Typology

Since the urban proposal is focused on the preservation of significant and systemic features (like green areas and the tree line) the new housing typology is based on the dimensions of the available land surrounding the existing Coral Gables homes. Because the city was built on strict setback parameters, the available area surrounding existing homes is generally the same for most homes. This allows for the design of a typology ranging from twelve to sixteen feet wide and twenty-five to forty feet

long, with some exceptions. These dimensions are ideal for a single-wide house, like the Florida vernacular types and it offers numerous dimensional variations and aggregation patterns, which can accommodate up to a family of four in accordance to the maximum need established using census data. These multiple possibilities in size and aggregation not only allow for a variety of household sizes but also for a diversity of uses and income levels.

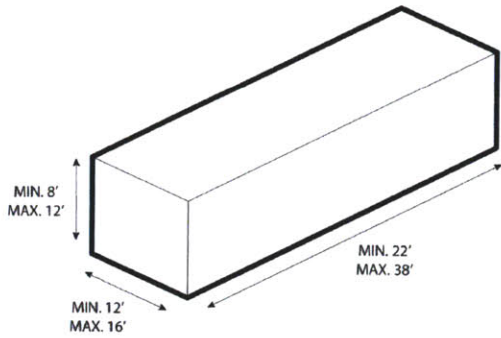


Diagram of resulting dimensional parameters for the proposed typology

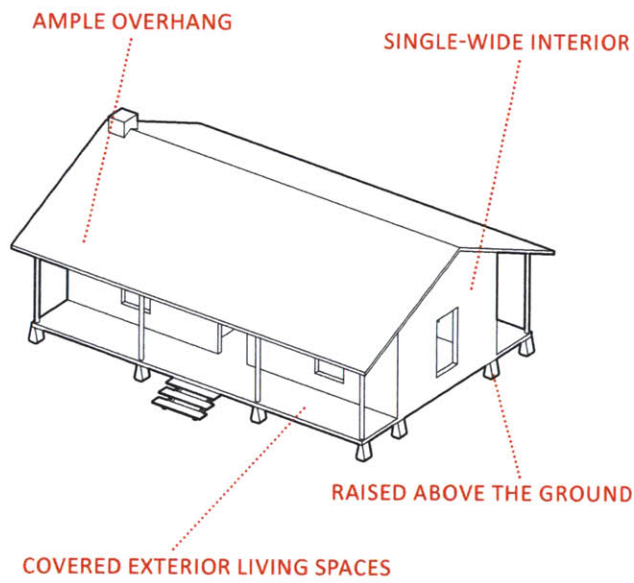
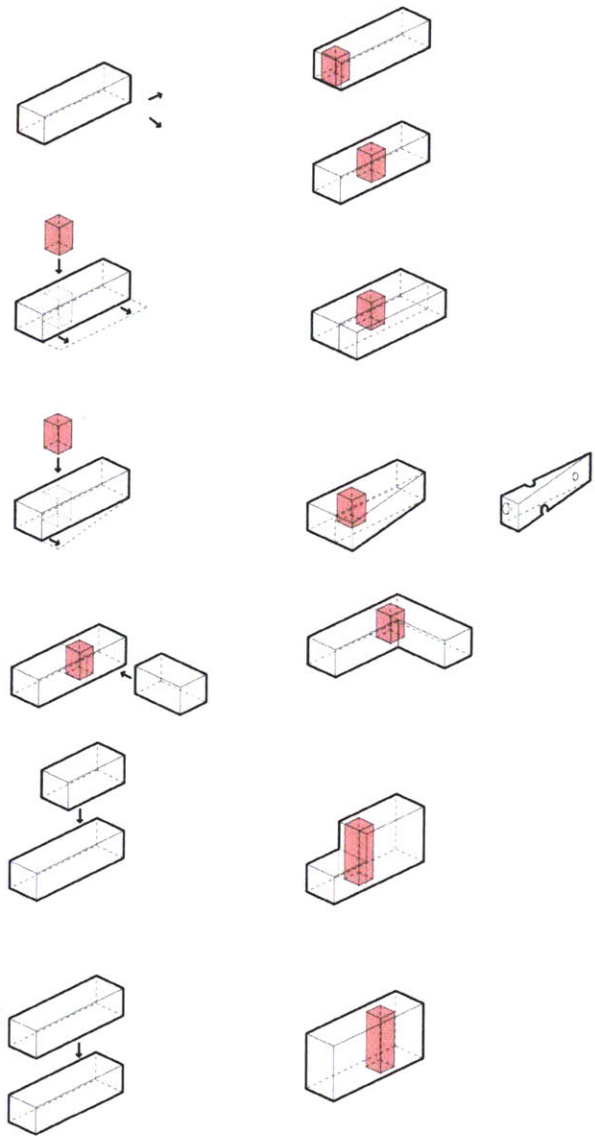


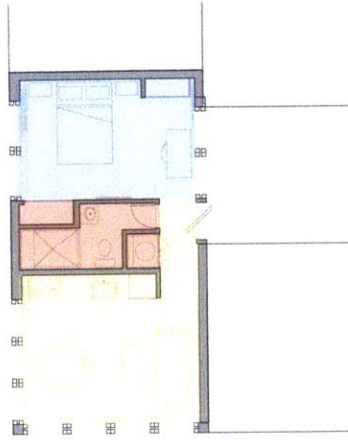
Diagram of Florida typology highlighting its most significant characteristics



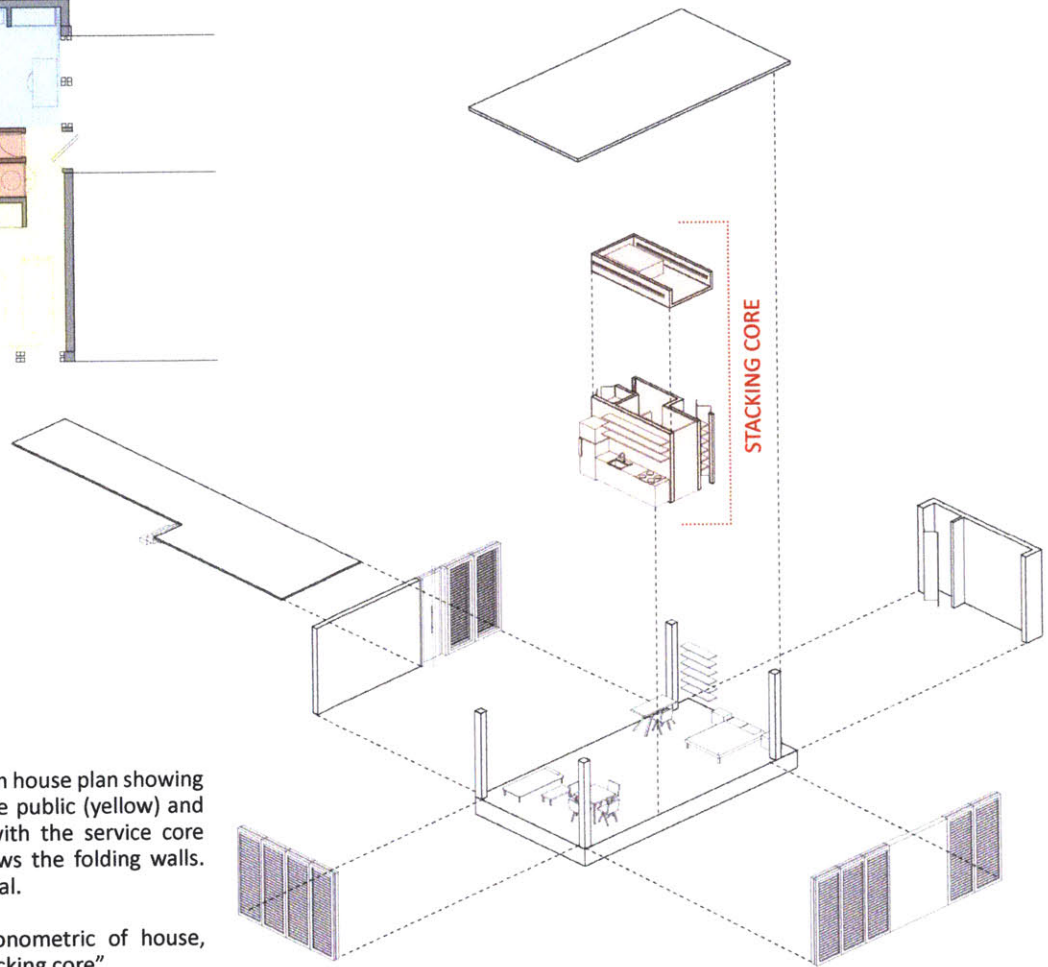
Introduction of the core to the single-wide type and aggregation possibilities

The traditional Florida types use overhangs and raised porches in order to provide exterior living spaces, which allow the interior area to remain small and more closely relate to the tropical South Florida environment. In addition to promoting exterior living through porch extensions, raising the building above grade restores the effect of understructure ventilation which provides a variety of practical and ecological benefits like lower cooling

costs, decreased moisture accumulation which reduces the probability of cracked foundations and improved indoor air quality as a result of decreased exposure to radon and other ground emitted toxicities. Typologically, the main difference between the Florida vernacular types and the contemporary home is the specific allocation of space for indoor plumbing, which the vernacular type did not take into account.



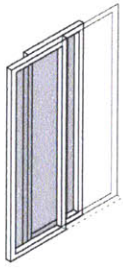
Above: One-bedroom house plan showing the separation of the public (yellow) and the private (blue) with the service core (red). Plan also shows the folding walls. Total 416ft² residential.



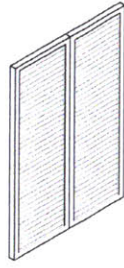
Right: Exploded axonometric of house, highlighting the "stacking core"

The proposed type offers the benefits of the vernacular type, which include appropriate sun-shading and cross ventilation with the added amenities of contemporary construction which include indoor plumbing and foldable exterior walls. The addition of a plumbing core to the traditional single-wide type creates a supplementary architectural element that can be used to efficiently separate the private and public functions of the home, and in the cases on mixed-used dwellings, to separate the commercial from the residential. The smart use of the core as a layout-organizing element is especially

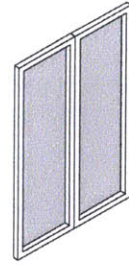
significant when the main focus is to keep the area of the house small without foregoing the necessary amenities of a contemporary home. In addition to aiding in the resolution of layout challenges, the core serves as a full service core that handles not only plumbing but also electrical and mechanical equipment. This stacking method takes advantage of the type's ten to twelve-foot ceilings allowing for the kitchen and bathroom areas to occupy the first eight feet while equipment can be stored above, keeping unoccupiable area to a lean and cost effective minimum.



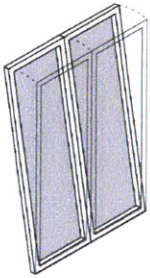
SINGLE GLASS SLIDER



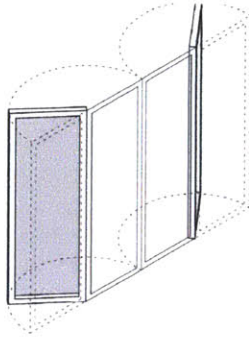
FIXED LOUVER



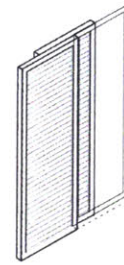
FIXED GLASS



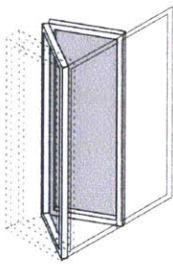
TILT AND TURN GLASS



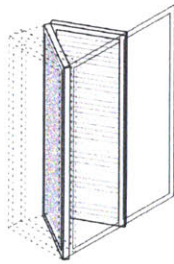
FULL-SWING



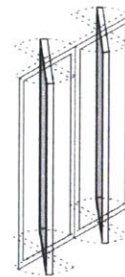
SINGLE LOUVER DOOR SLIDER



COLLAPSIBLE NANA (LOUVER AND GLASS) WALL

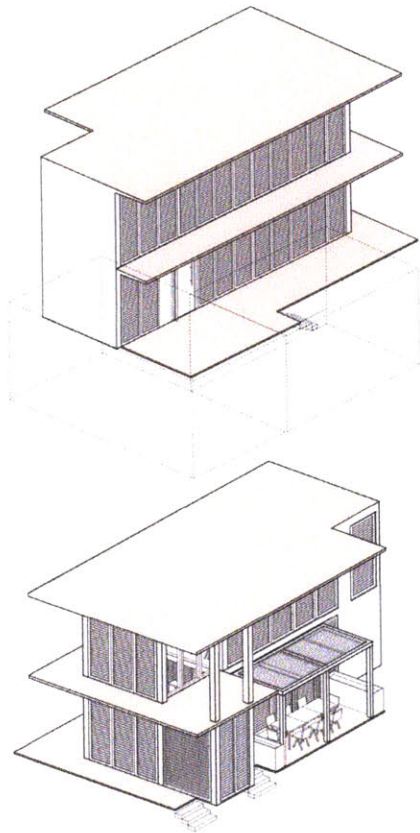


FULL-PIVOT



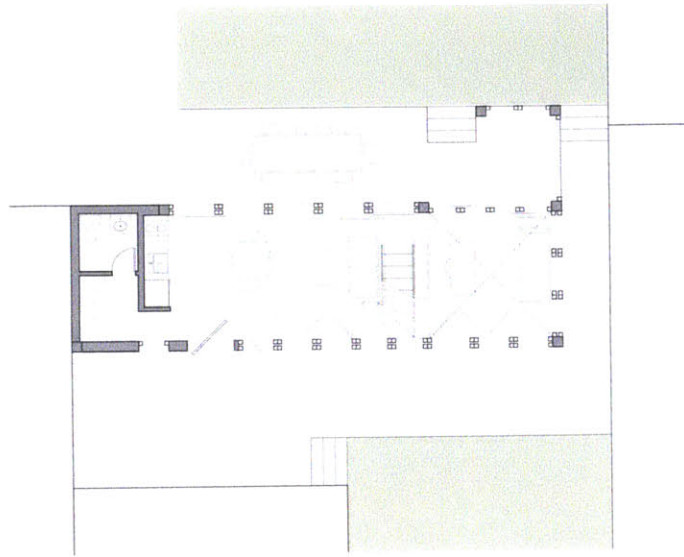
PARTIAL-PIVOT

Louver and glass door operability alternatives. These should be used as appropriate depending on specific programmatic and privacy constraints. The different options allow most walls to be completely collapsible or operable.

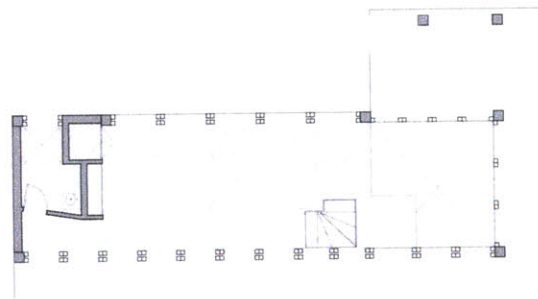


Above: Axonometric views of house highlighting decks and overhangs

Right: One-bedroom house plan showing the relationship of typological elements like raised decks to community spaces (in green). Plans also show the folding walls. Total 723ft² residential.



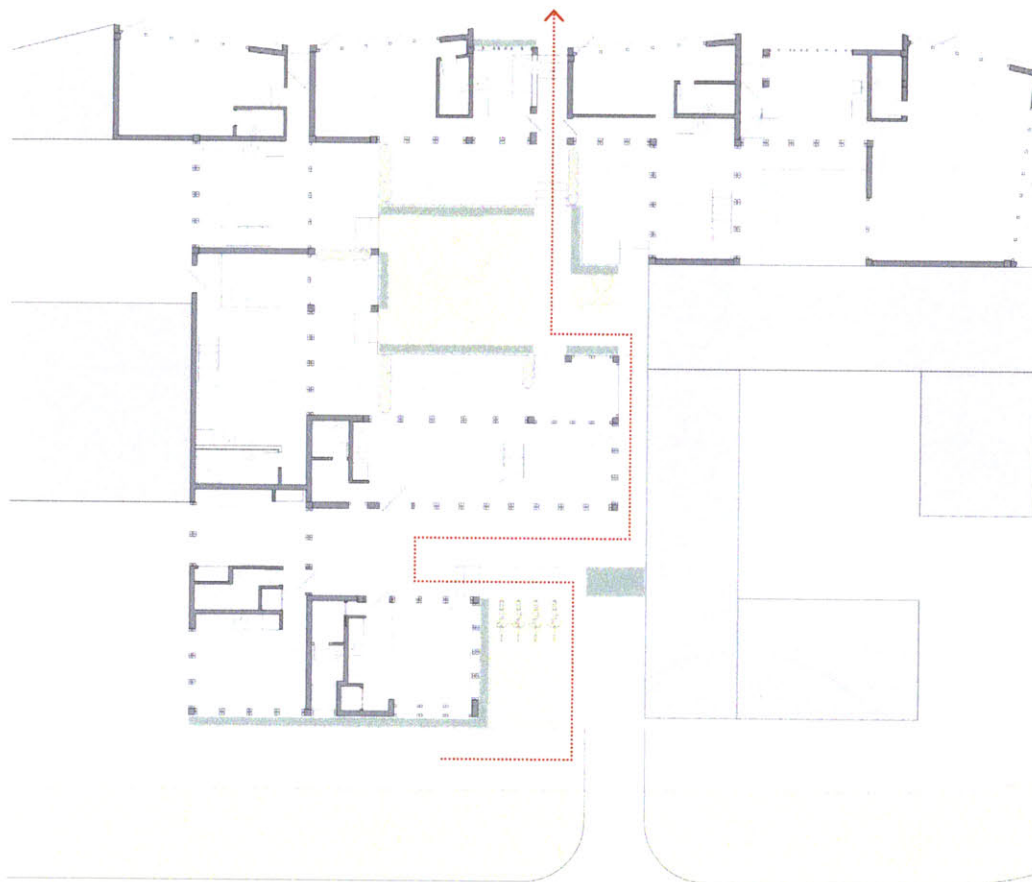
First Floor Plan - 416ft² of private space



Second Floor Plan - 307ft² of private space

In addition to the interior features of the house, the type is also significantly comprised of exterior components that define space. The most important exterior elements are the porch raised two feet above grade and the plentiful overhangs, which span up to eight feet. Both of these elements along with the folding louver doors indoor/outdoor spaces that not only extend the living area but also offer increased sun protection for the house. They are also essential privacy elements that reinforce the possibility of community spaces within the block since they offer a diversity of privacy alternatives.

Again, we see the inextricable relationship between the architectural typology and the resulting city morphology since typological elements like raised decks and overhangs also define community spaces, which determine an array of decisions that inevitably affect the form and function of the urban realm. Most significantly, the proposed density increase, the housing size decrease and the provision for exterior living spaces—all aspects related to the typology—promote in concert a greater sense of community and active citizenry by encouraging people's presence in the public realm.



Illustrated plan of proposed houses and open spaces, showing through-path from existing street to alley

The Raised Porch and the Green Spaces

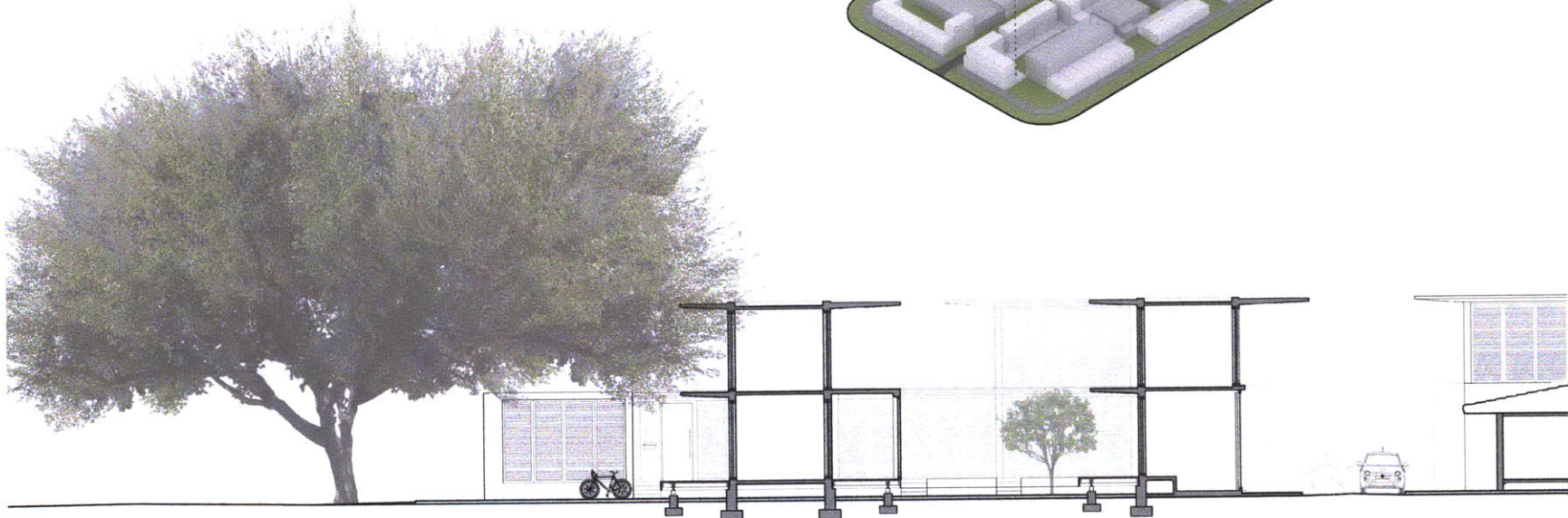
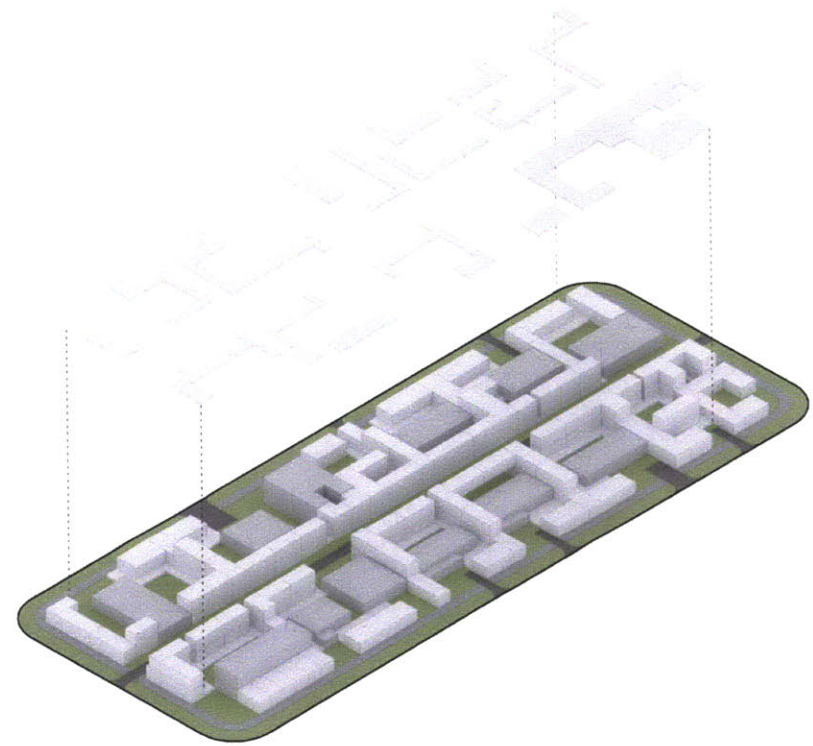
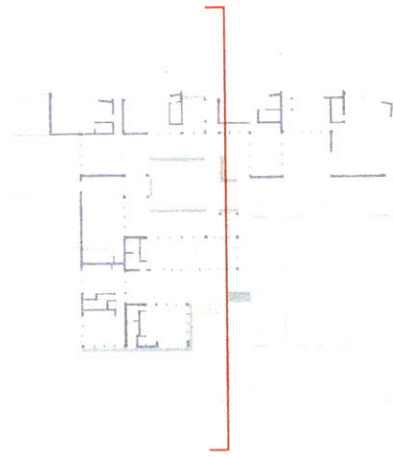
Beyond their architectural purpose, the raised porches are an essential systemic element of the urban proposal as they define two main types of green open spaces: the semi-private yards and the reinterpretation of the more public front yard. Within each of these two spaces, the porch serves different purposes; however, in both cases, the raised decks act as a privacy element, raising the entrance level of the adjacent homes and creating a buffer

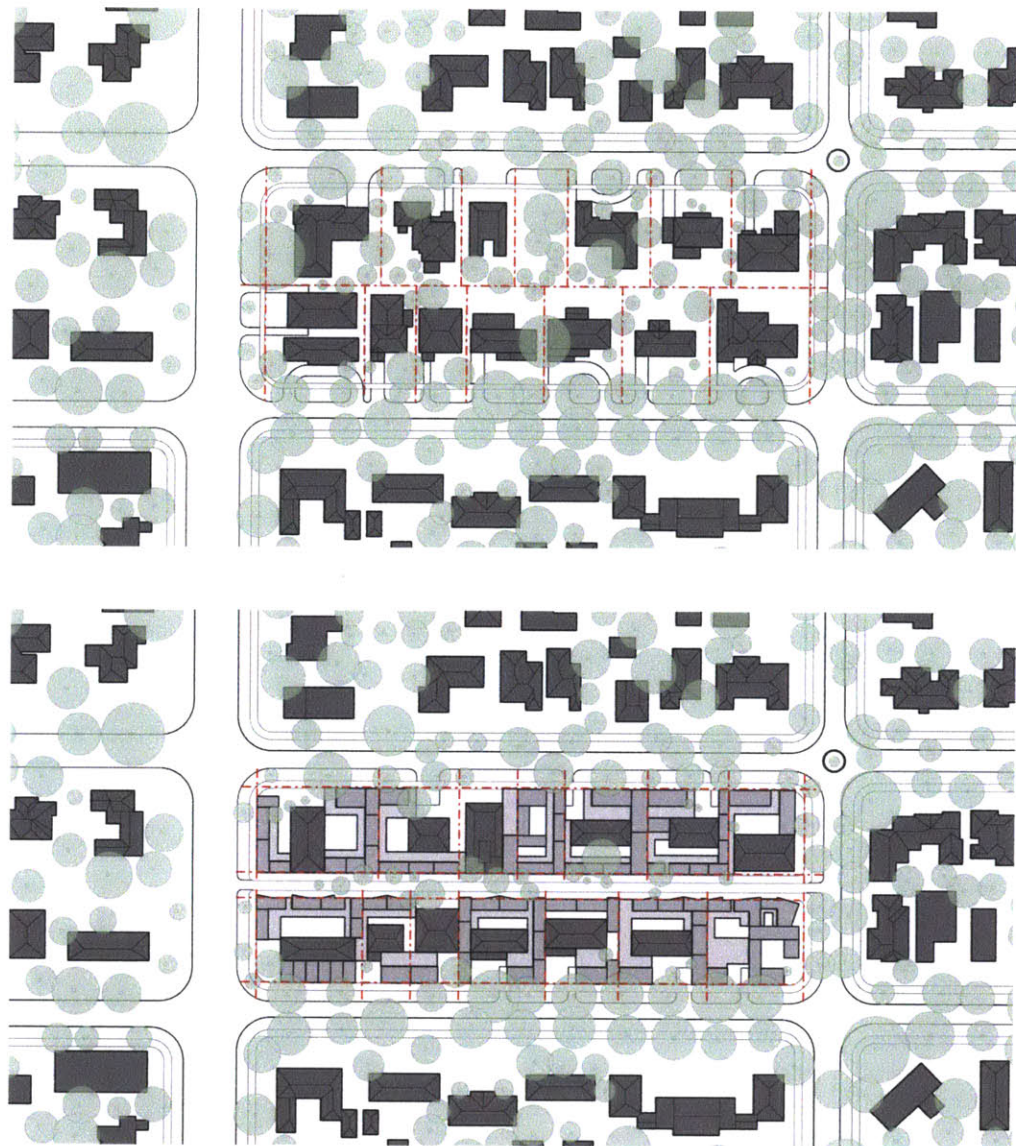
zone between the private house walls and the more public open spaces. In the inner-block courtyard spaces, the raised porch serves as an extension of the private indoor spaces. Then, a series of design and privacy elements that include screens, planters, operable sun-shading structures and the overhangs are used to further demarcate the space and determine the level of privacy for each section of exterior deck according to the interior functions of the house.

Far Right: Axonometric diagram of proposed block scheme, highlighting the systemic nature of the raised deck network.

Right: Section cut key

Bottom: Cross Section of proposed scheme cutting through the new private courtyard and the reinterpreted front lawn.

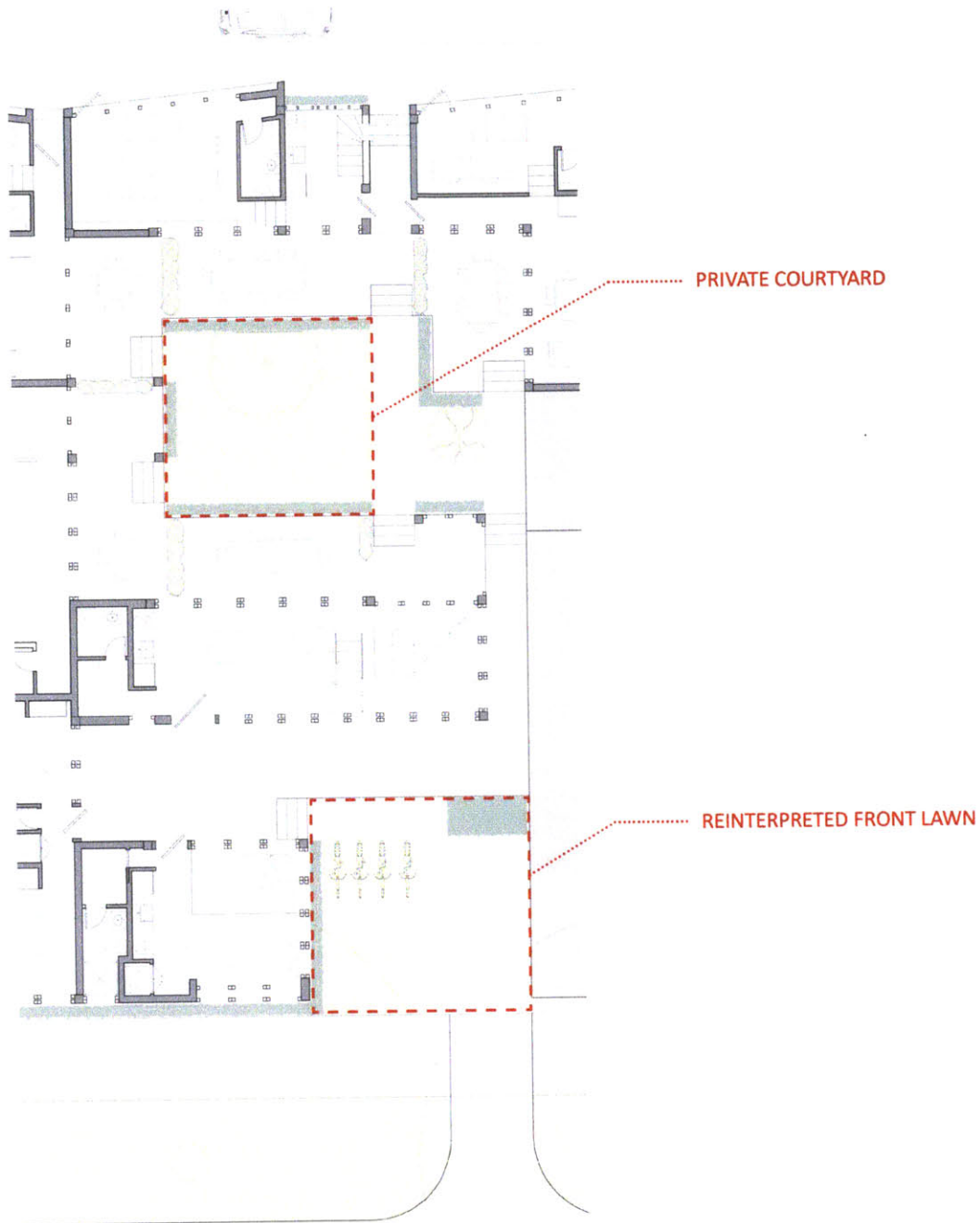




Existing property line condition (top,) compared to proposed condition (above)

The design and use of the courtyard areas can vary depending on their size and on the decisions of the residents immediately adjacent to them. The ownership of these areas can be collective or single depending on the ownership condition of the plot. The urban proposal respects existing plot lines, giving existing land-owners various ownership choices that include single ownership of the land, a condominium arrangement or the division of land according

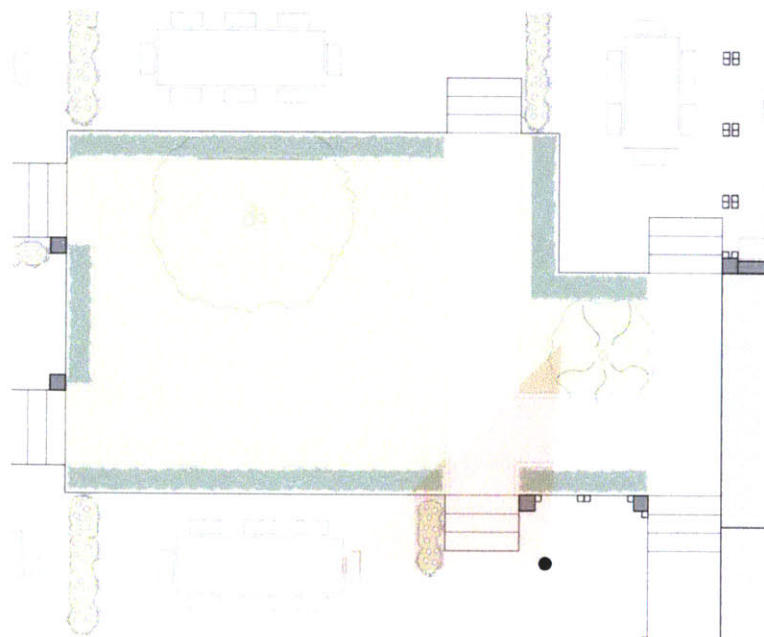
to the proposed structures. In any ownership situation the courtyard areas provide a variety of possibilities that range from structured community gardens to open lawns. These areas can be gated and only accessible to the residents of each specific plot, and despite that they are always accessible from the main street and the alley, they are not visible from the public right of way, making them semi-private open spaces.



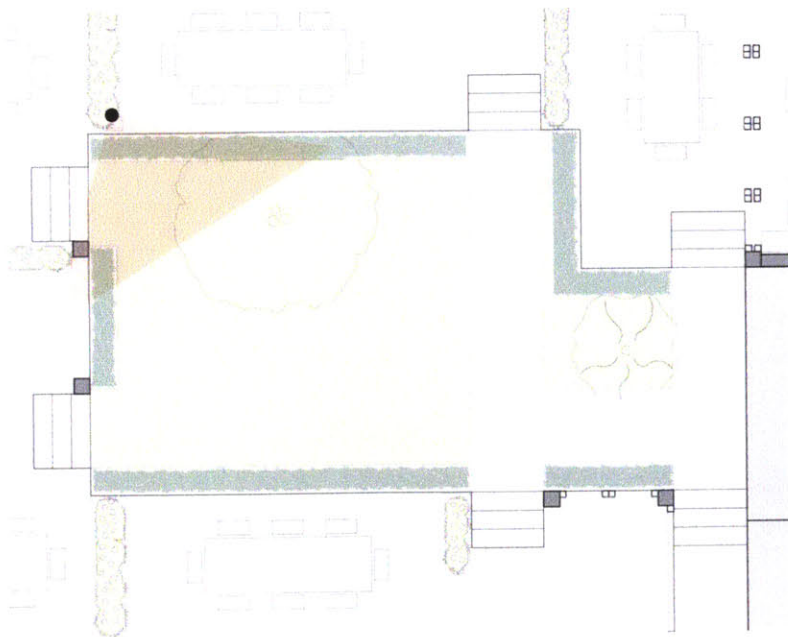
Illustrated plan of highlighting the two main different proposed open spaces

The other green open space is a reinterpretation of the suburban front lawn. These new spaces are created when the proposed strong urban edge breaks into open areas that have more specific design and purpose than the semi-private courtyards of the mid-block. This new front yard serves as an entrance

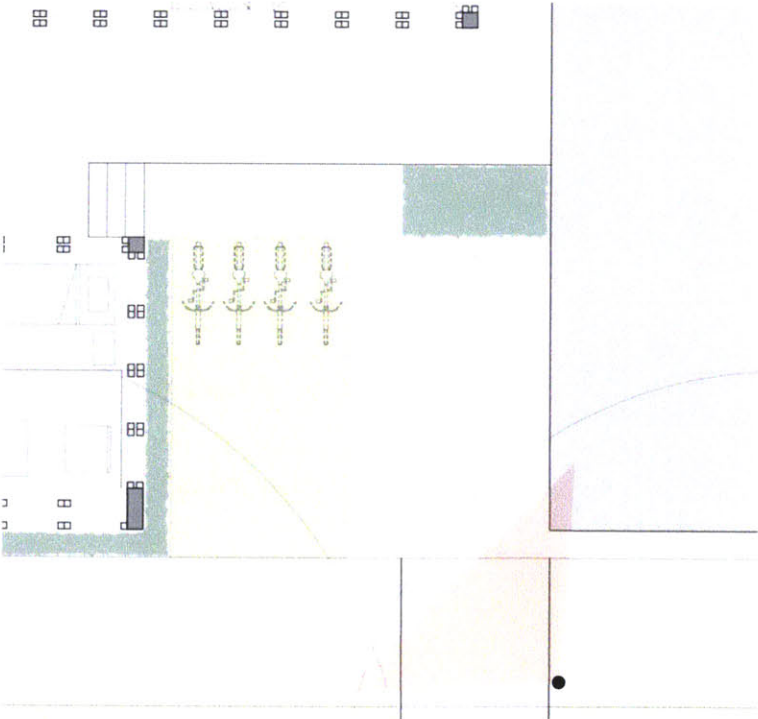
to the micro-community that is designed to occupy each plot. They very often serve as a public, on-street indicator of the semi-private courtyard beyond but most significantly serve daily practical purposes like space for bike storage, mail collection and limited parking.



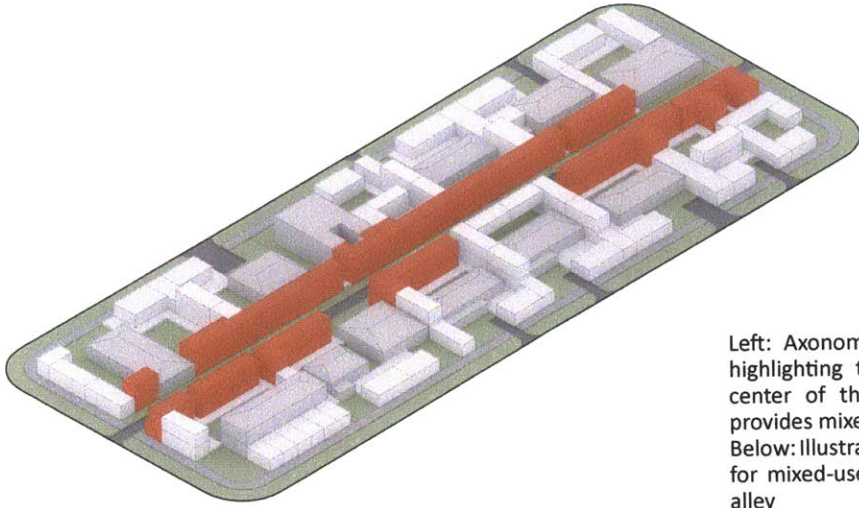
Top: View of private courtyard as indicated with view cone in key above



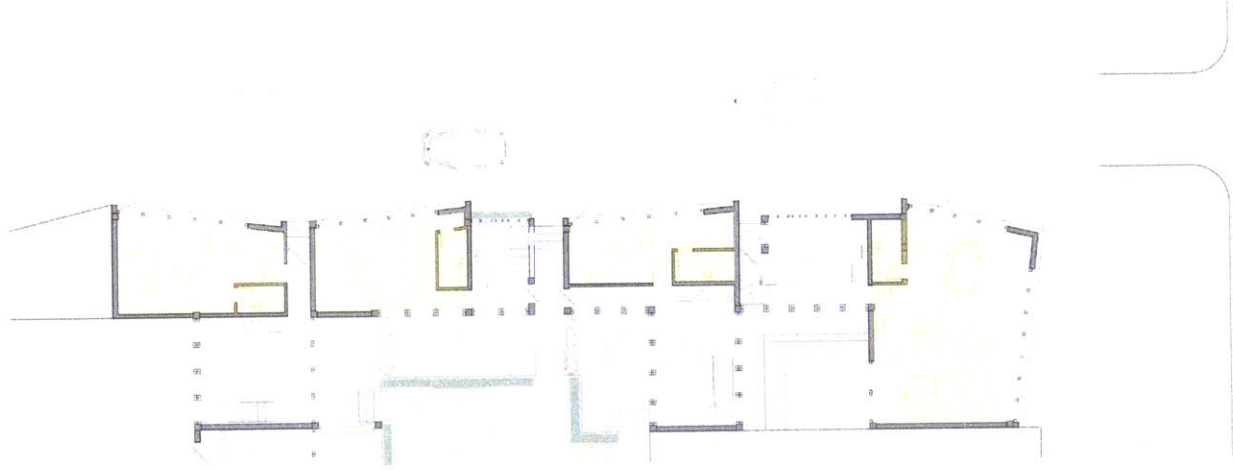
Top: View of private courtyard as indicated with view cone in key above



Top: View of private courtyard as indicated with view cone in key above



Left: Axonometric diagram of proposed block plan highlighting the density concentration towards the center of the block around the alley, which also provides mixed-use possibilities on the ground floor
 Below: Illustrated proposed plan showing opportunities for mixed-use spaces on the ground floor along the alley



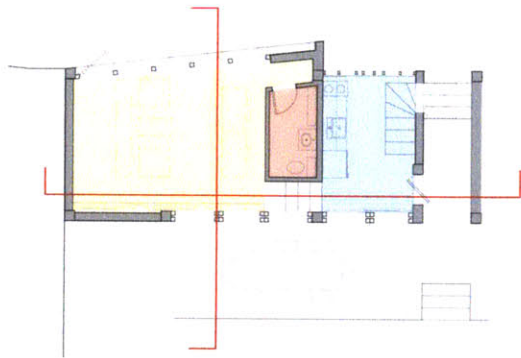
Mixed-Use and Multi-Use Spaces

In order to create a more urban condition in terms of density and use, the proposed houses along the new alley will always rise to two floors and offer the possibility for small commercial or office space accessible on the ground floor from the alley sidewalk.

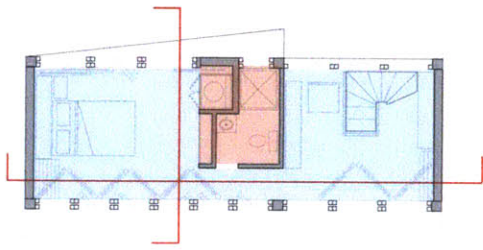
The residential entrances will remain on the level of the systemic deck, raised at two feet above grade in order to maintain privacy, especially facing the more public alley. These proposed commercial and office spaces are

intended to bring a greater diversity to the area by offering the possibility for the homeowner to rent the spaces or personally use them.

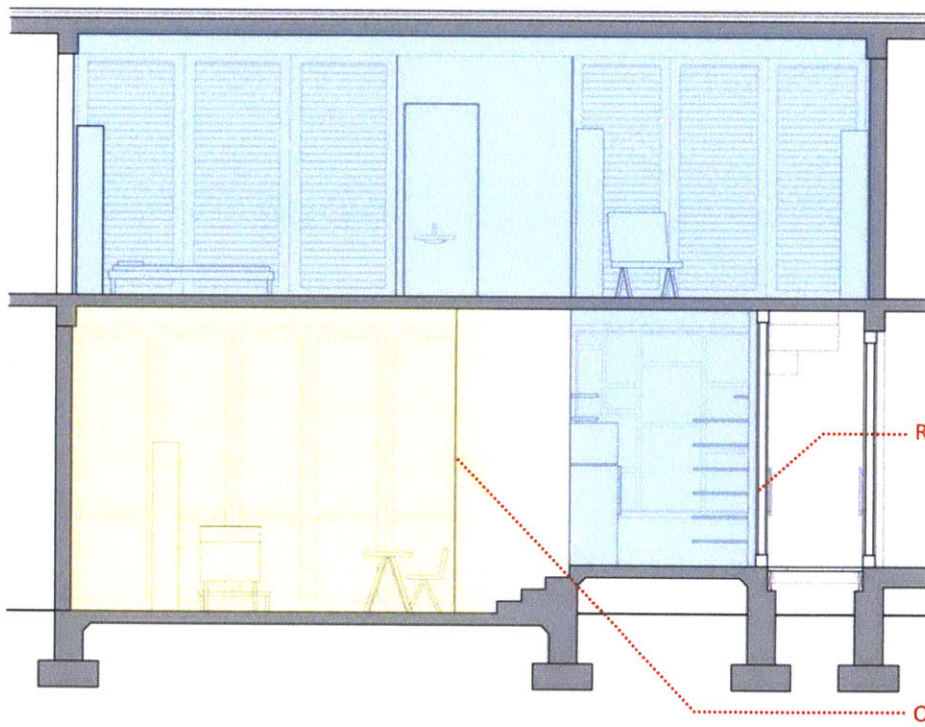
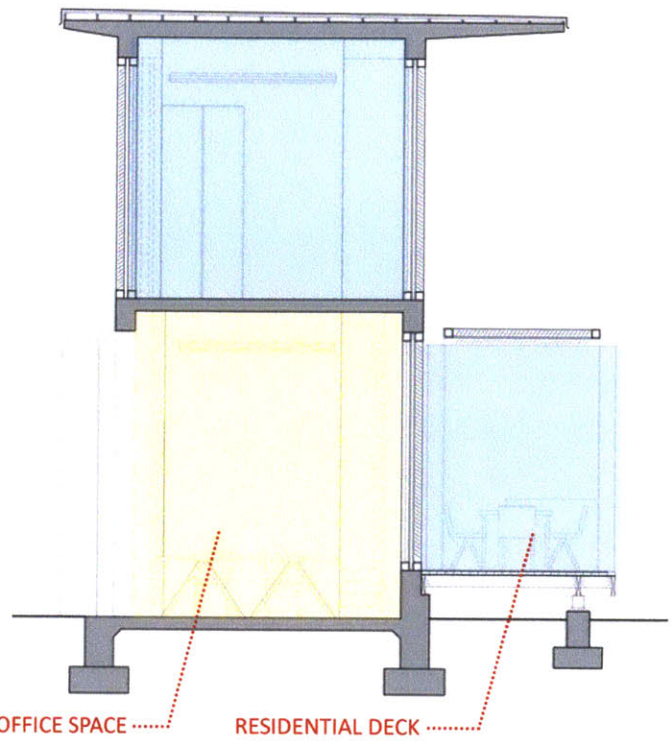
In either case, they are intended to attract smaller businesses rather than large corporations and in the case that the area is not ready for commercial or office activity they are small enough that they can be used as part of the house. This flexibility allows the area to be more economically resilient than areas designated for single use.



First Floor Plan - 239ft² of public space & 86ft² of private space



Second Floor Plan - 322ft² of private space



Top Left: Mixed-use, one-bedroom house plans showing the separation of the public (yellow) and the private (blue) with the service core (red). Plans also show the folding walls. Total 408ft² residential.

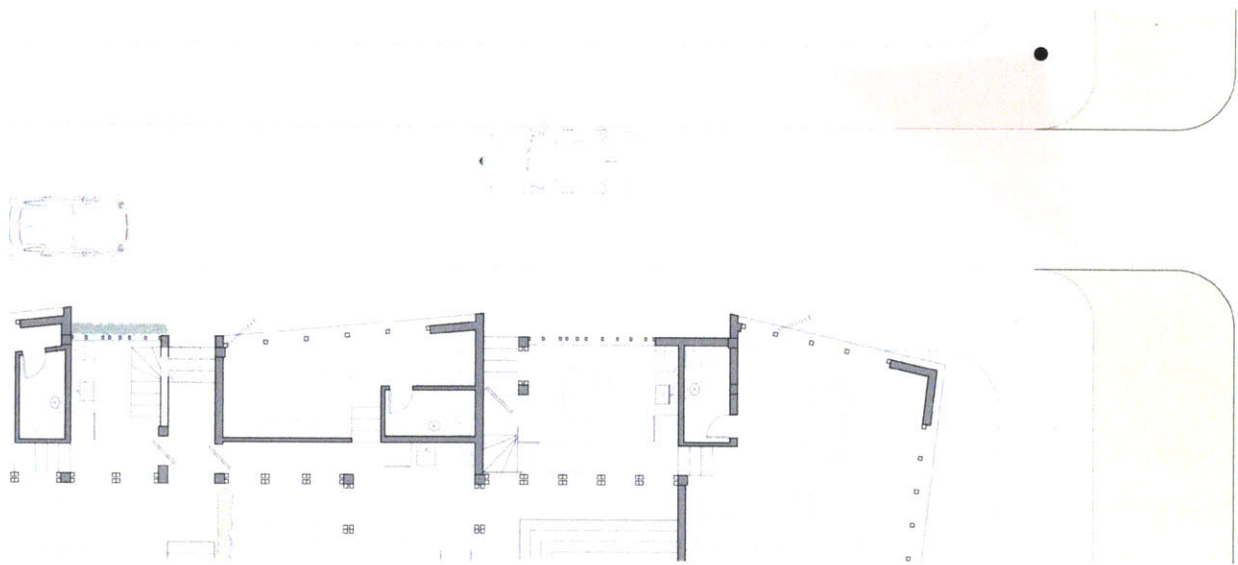
Top Right: Cross section of house, showing relationship between raised exterior, private space and at-grade, interior office space.

Above: Longitudinal section of house, showing residential entrance at +2' in relationship to office space at +0'.

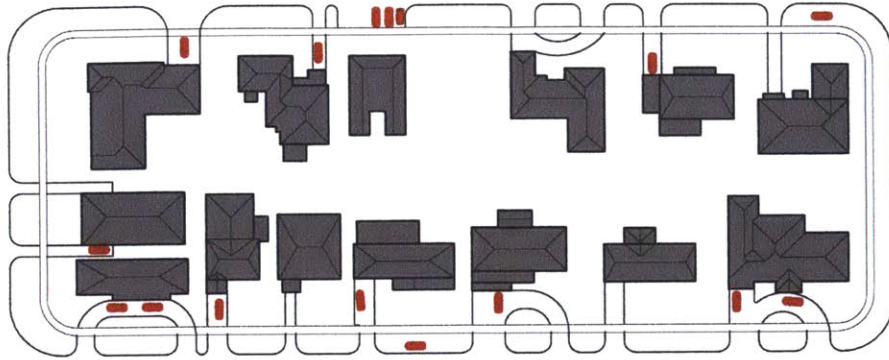


Illustrated site plan showing urban corner condition using wider typological dimensions

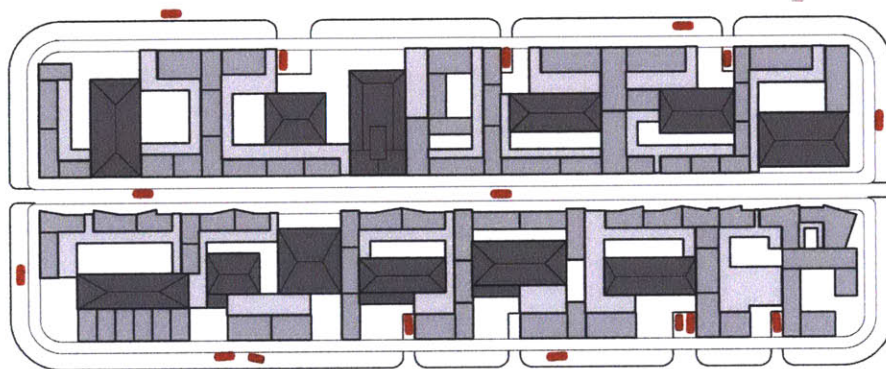
In addition to these small spaces facing the alley, the typology can be used (in its bigger dimensional variations) as retail or commercial-only buildings. This condition is only possible on the corners of the blocks, where they are more easily accessed through two existing neighborhood streets and the land plots are usually larger. Since these buildings are intended for public and single use, they are designed to sit at grade for easier access and as an indication of their public nature. Like the mixed-use spaces, these buildings are intended to attract smaller businesses.



Top: View of public alley as indicated with view cone in key above



Existing condition highlighting a typical parking arrangement



Proposed condition where parking arrangement is very similar to the existing, despite the drastic change to the front yard

The change of the existing street

The proposal of the new typology, structured green areas and strong urban edge close to the existing sidewalk will have a major impact on the existing neighborhood streets. Despite that the generous swales and large trees will remain the same, the increased density and program variations will change some of the character of the street, mostly through an expected increase of pedestrian and vehicular traffic.

In order to make the urban proposal a plan for growth beyond the existing neighborhood urban fabric, the preservation of existing systemic elements is critical not only to

maintain the valuable existing qualities of the street but also to facilitate the transition to the new elements and functions of the proposed urban plan. Using the swales as the most prominent parking area for the neighborhood is one of its most significant peculiarities. Altering and embracing this in the planting patterns and in the structured breaks of the urban edge would additionally benefit the impact and appearance of the streetscape in many ways emulating mature semi-suburban communities that have full-grown trees as a most desirable shade configuration.



Existing condition (top) compared to proposed condition (above) illustrating the urban change of the existing street

By maintaining the dimensions of the swales, they will inevitably evolve to become the major parking zone, preserving some of the existing street functions. Parking on the designated areas on the front lawns and on the alley is limited

and since, in increasing density and creating the possibility for programmatic variety, the project aims to reduce the need for vehicular use and thus only accounts for a small increase in the need for permanent parking spots.